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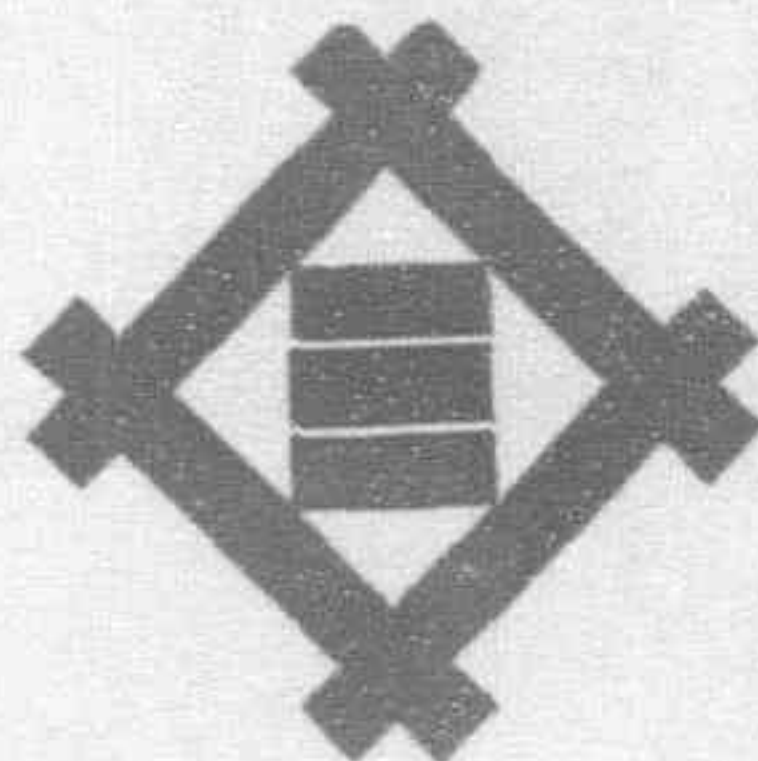
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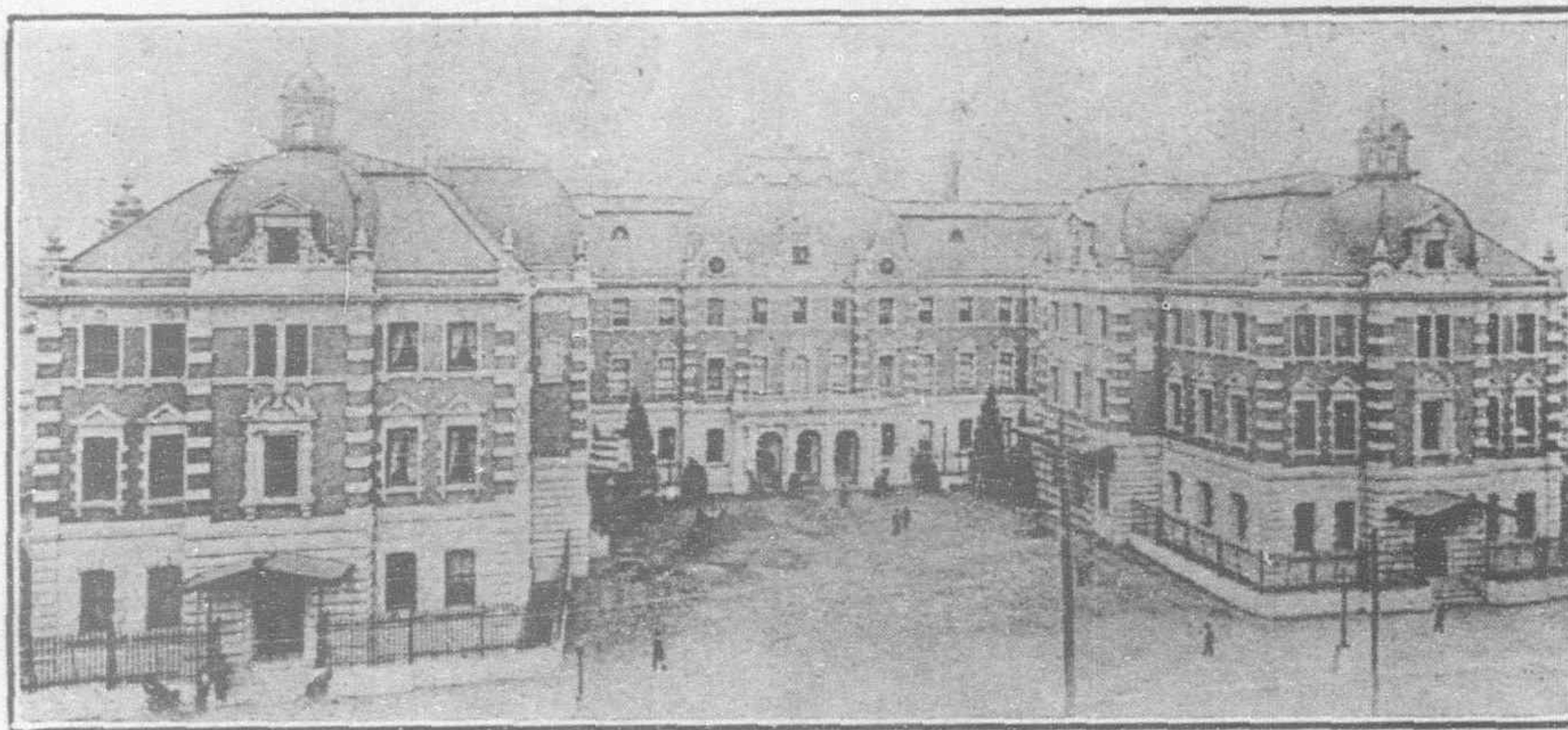
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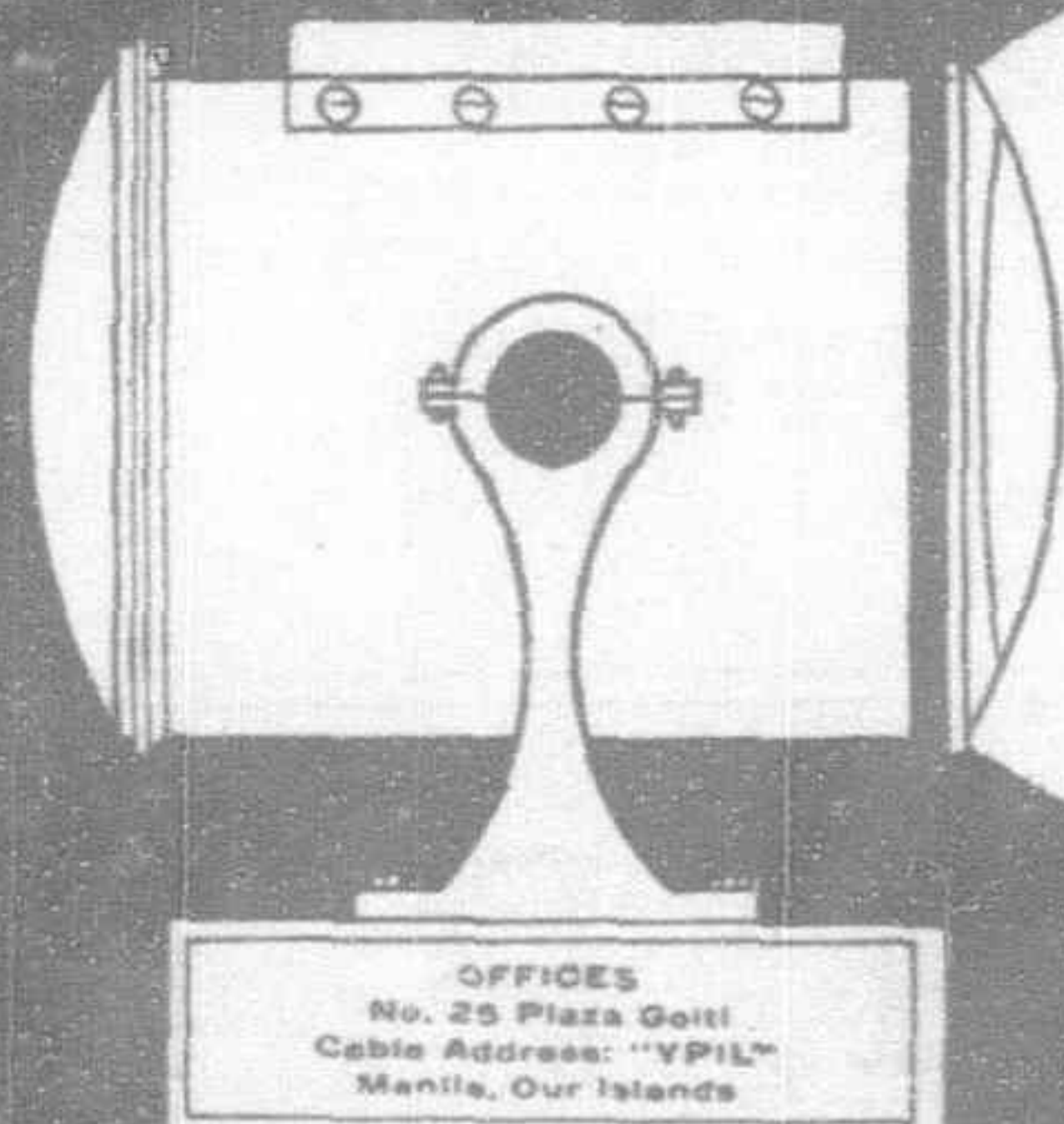
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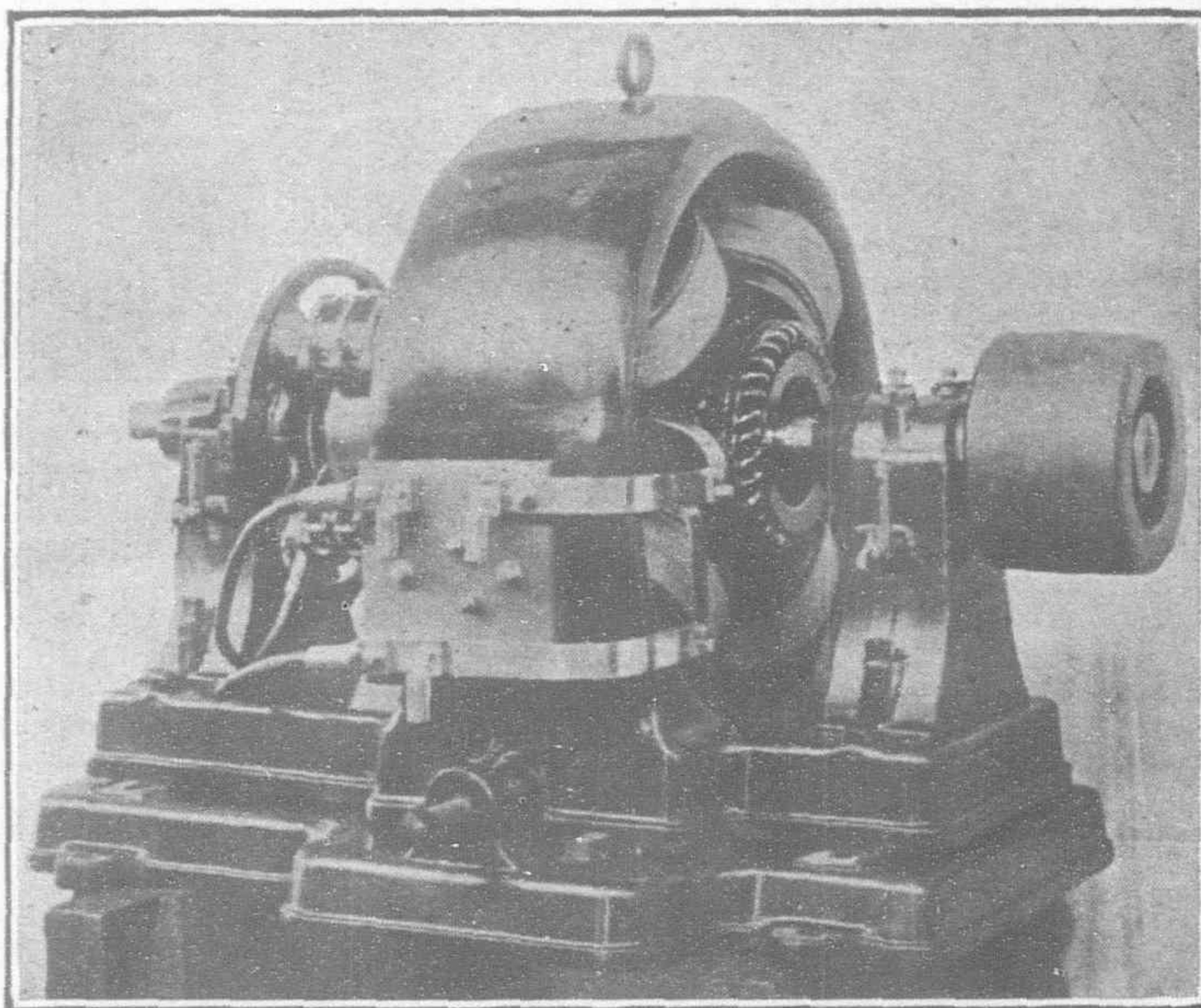
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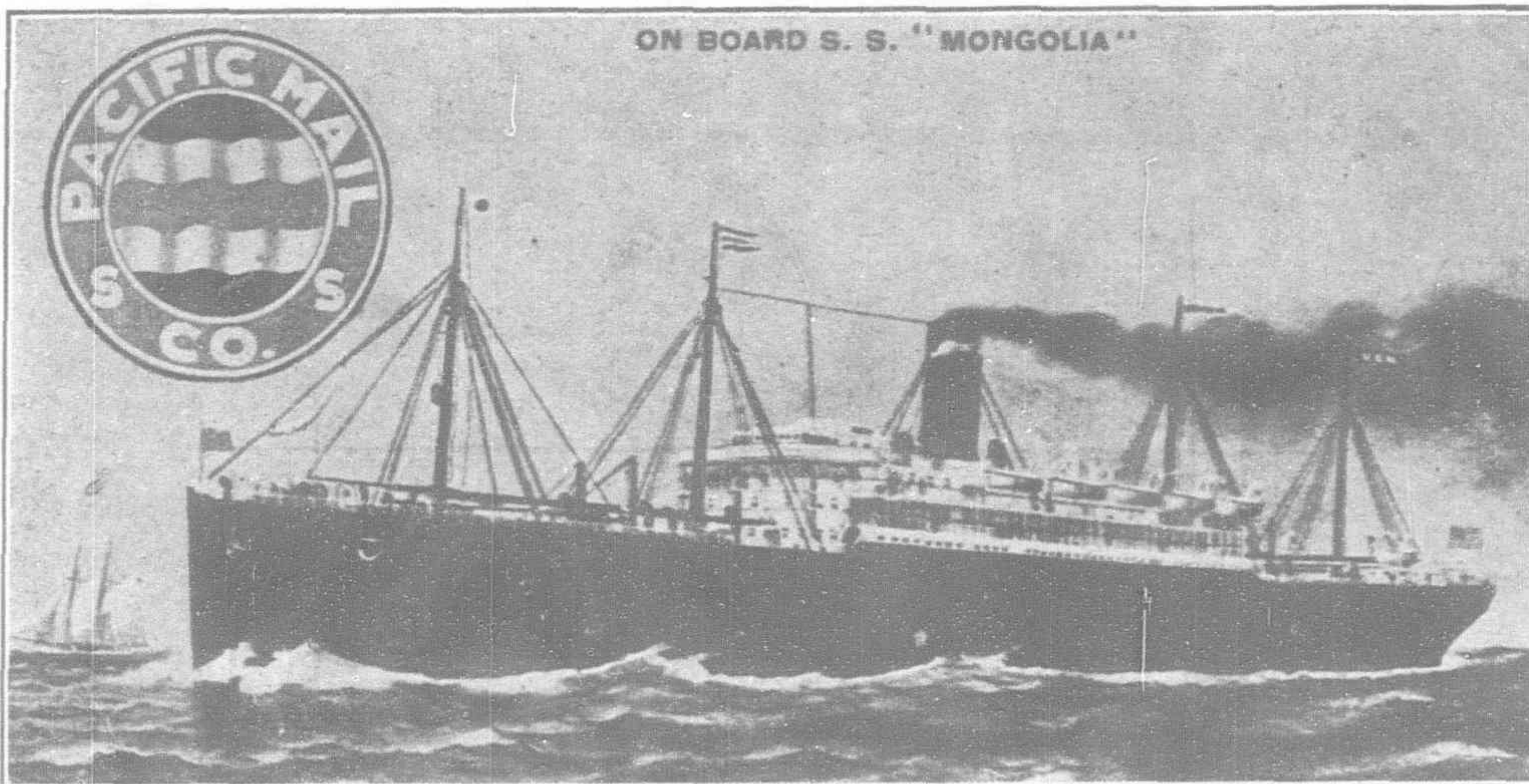
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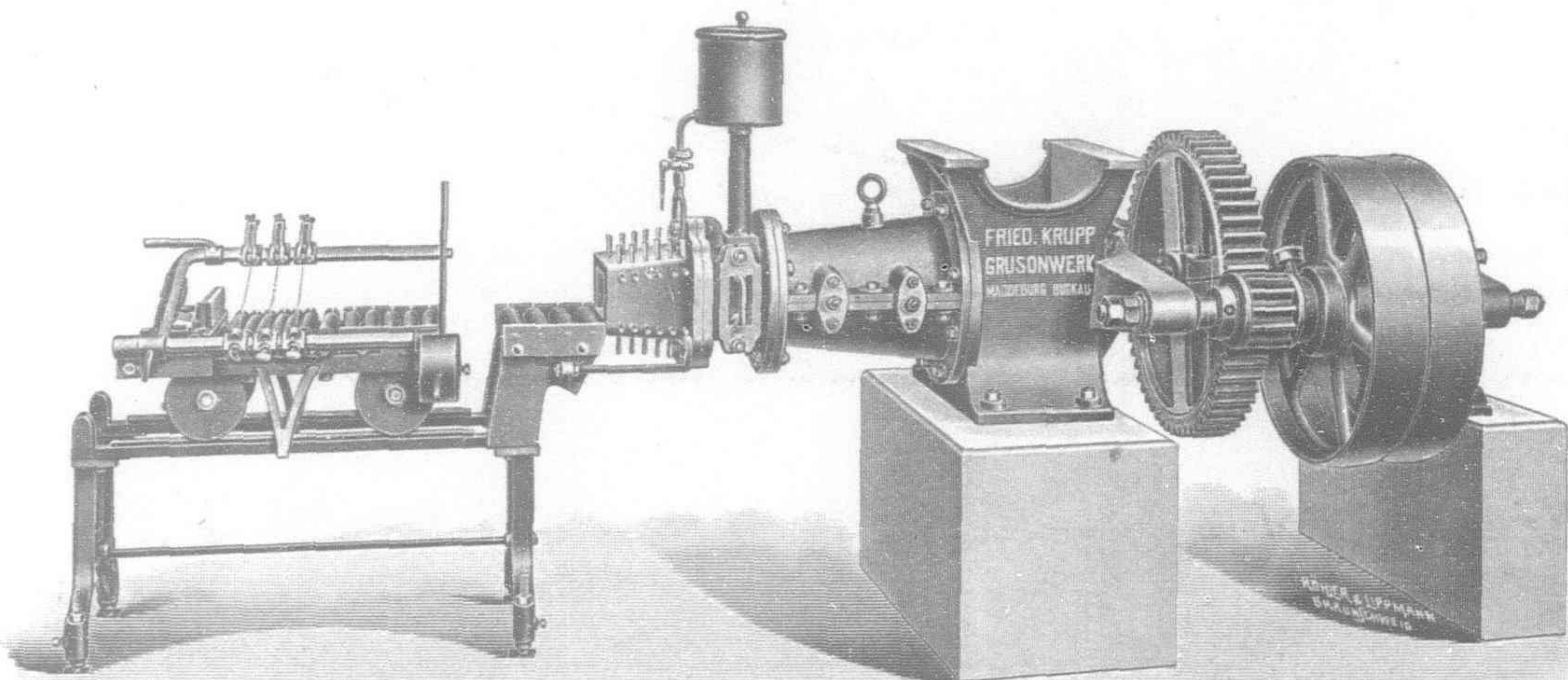
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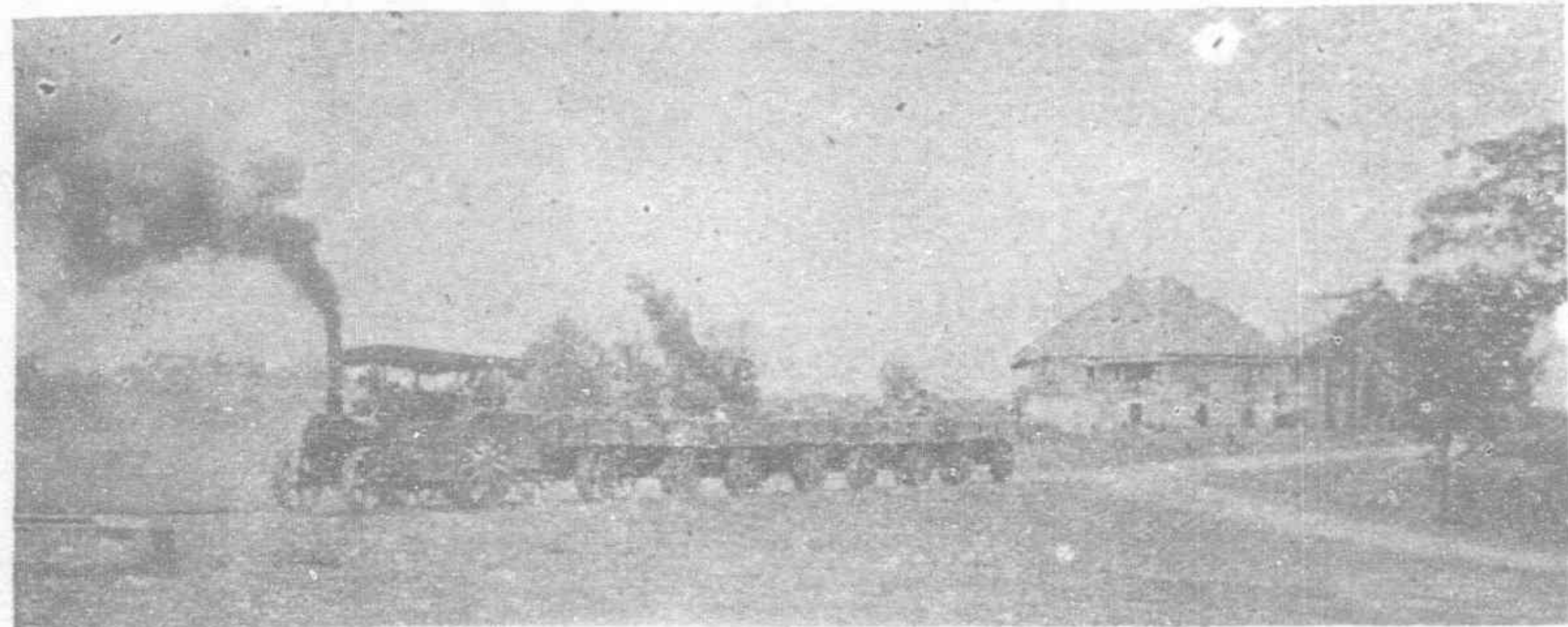
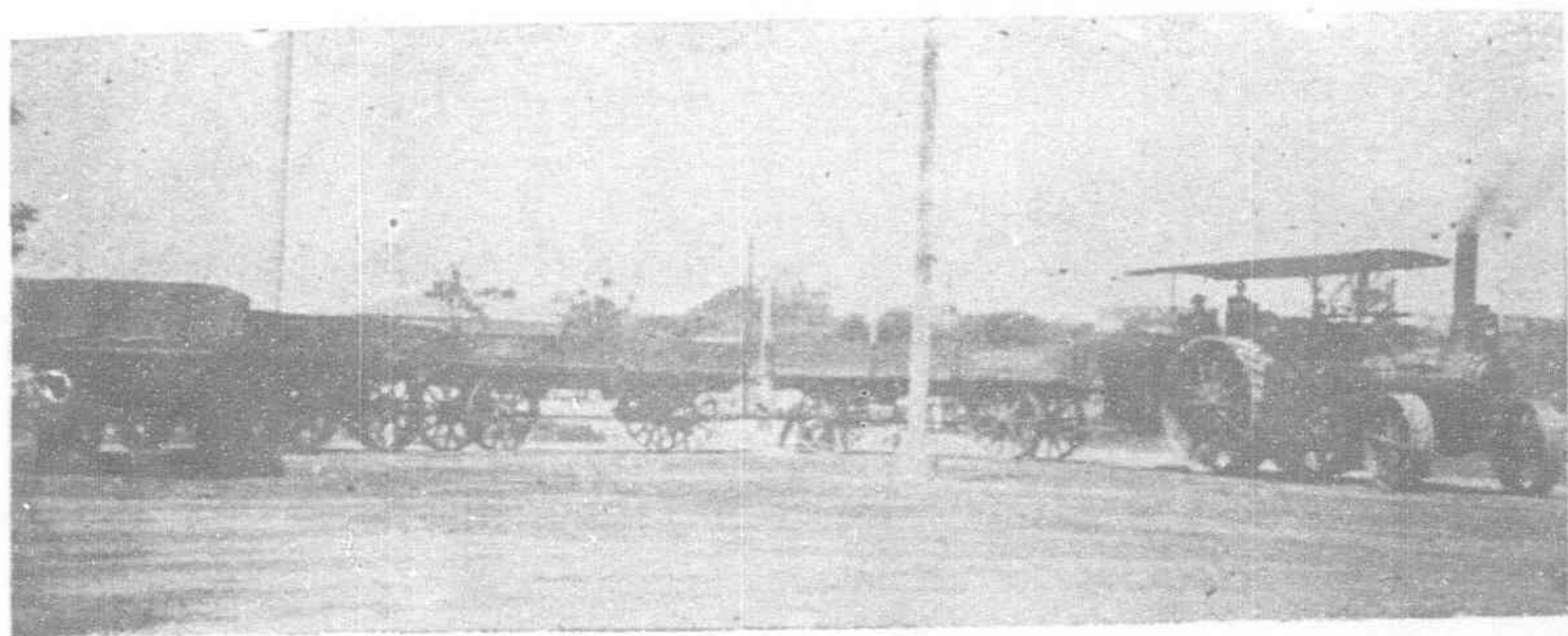
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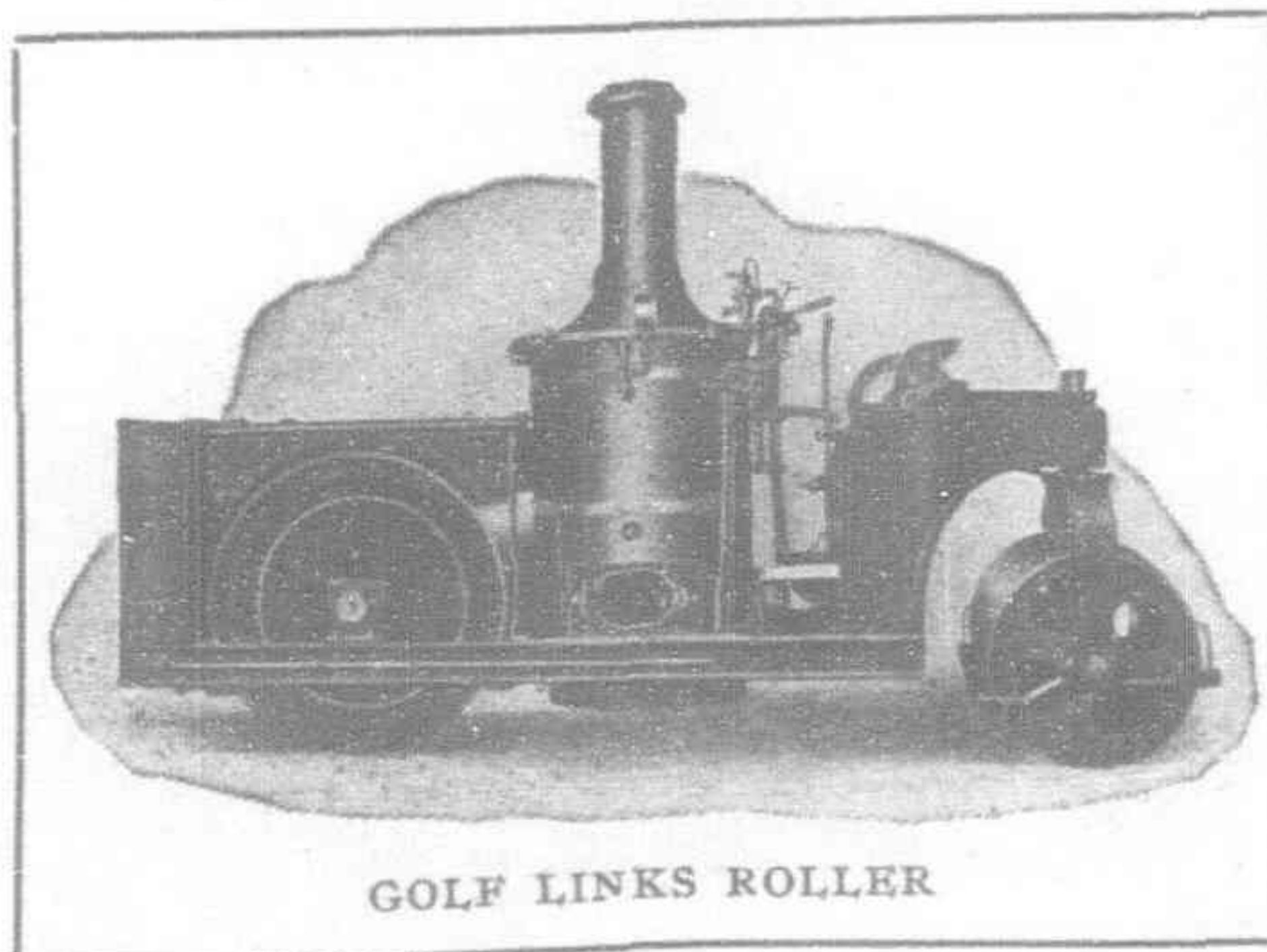


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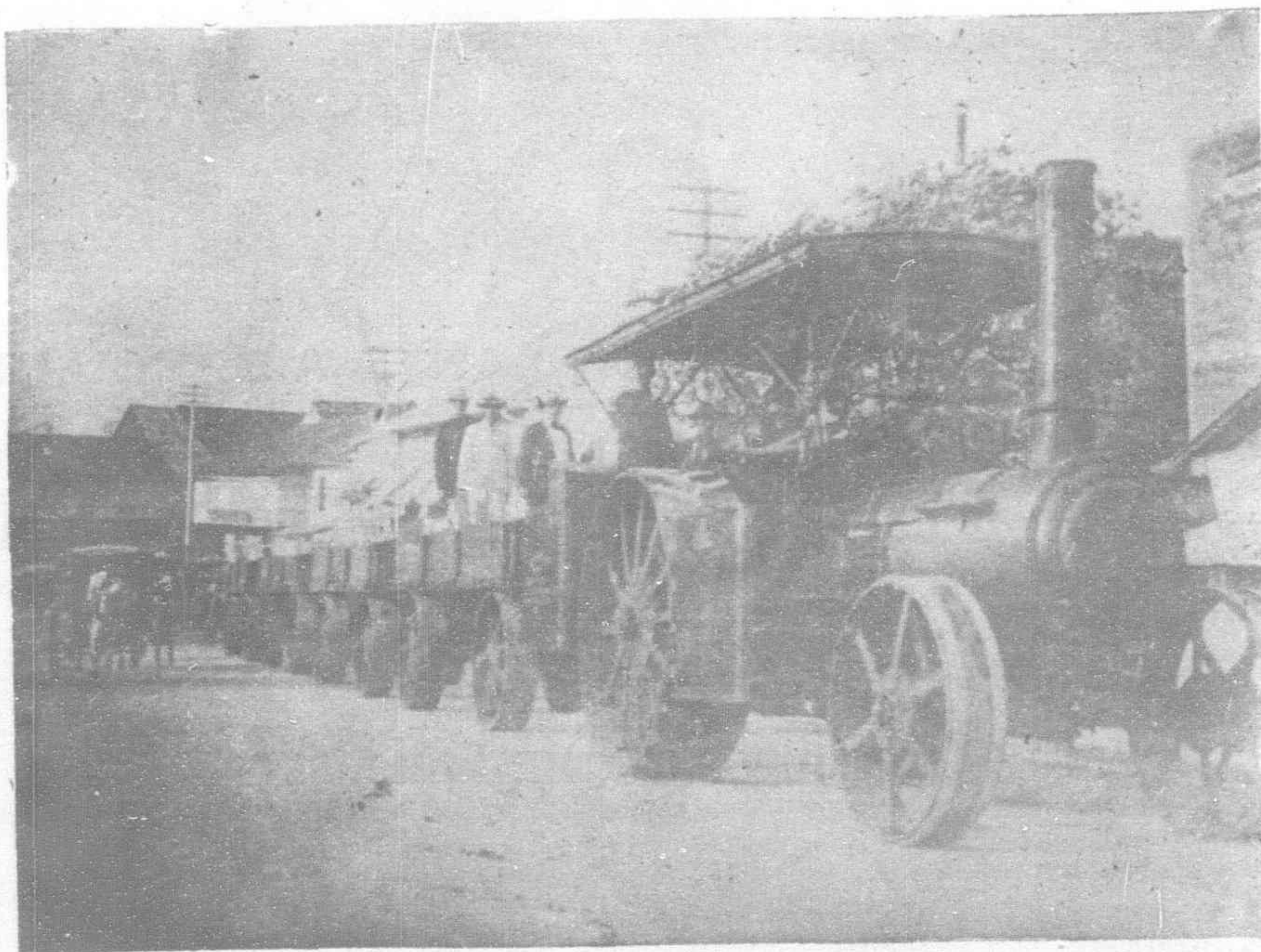
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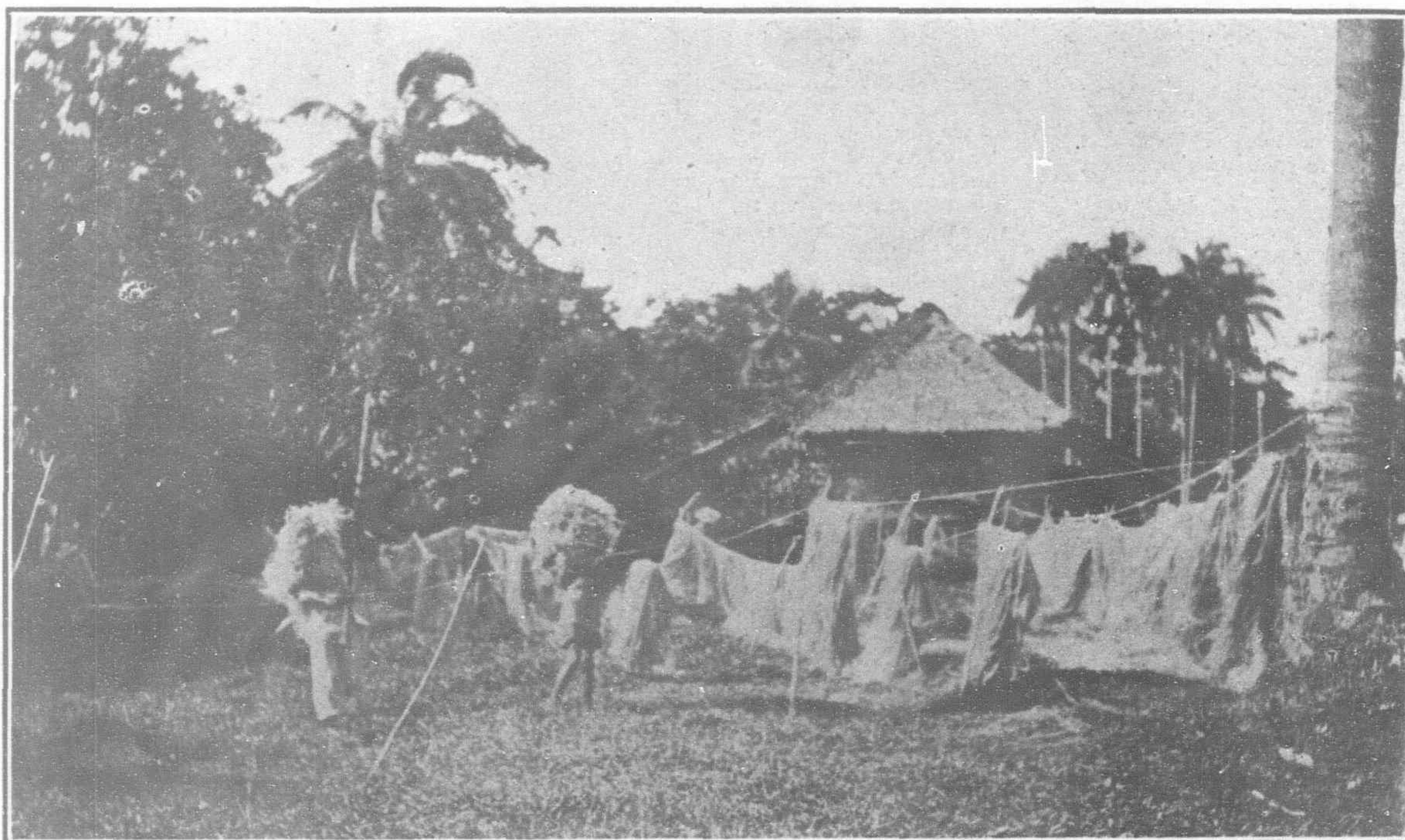


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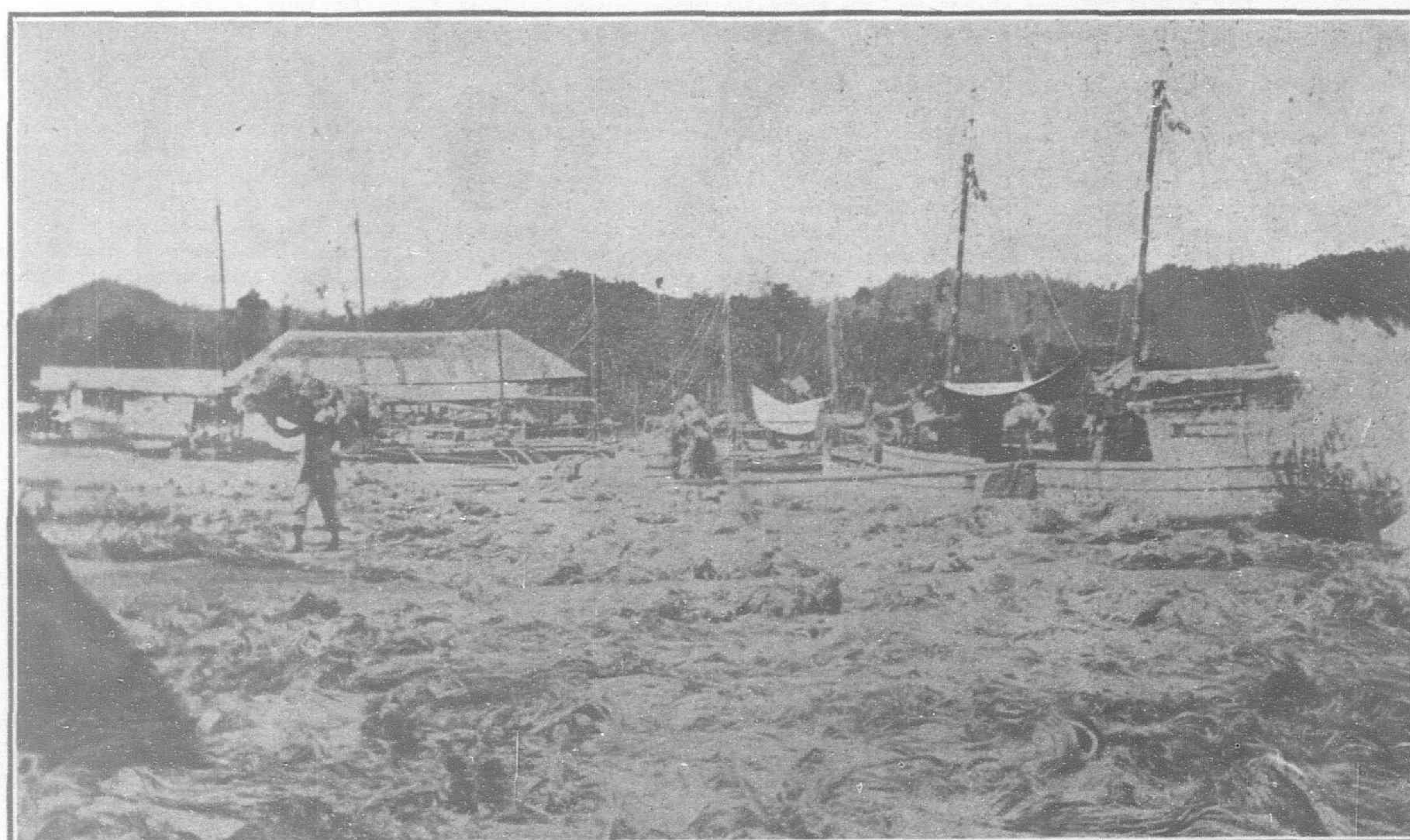
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EVADING THE FRYE SHIPPING LAW.

The Manila Times recently published a lengthy interview with Mr. Henry W. Peabody, the head of the big firm which bears his name, in which he pointed out what superficially appears to be a most serious menace to the interests of the Islands. Discussing the dangers threatened by the passage of the Shipping Law, extending the United States coastwise regulations to the Philippines, Mr. Peabody emphasized the fact that it placed the traffic of the Islands in the hands of a great monopoly, who, despite assurances to the contrary, would undoubtedly follow "trust" precedents and charge all that the traffic would stand, and so materially affect trade with the United States and offset any advantages which accrue to our products through a reduction of the Dingley tariff schedule.

It is urged that if the law be allowed to go into effect, it would give the monopoly of the trade between the Philippines and the United States to the Pacific Mail, Boston Steamship Company and the Hill lines, and rates, which are now obtainable at \$8.00 per ton, would be forced up to \$25.00 or \$30.00, and so completely absorb the additional benefits of a 25% tariff reduction.

We have no doubt Mr. Peabody has given careful study to this subject, as he is a recognized authority on shipping and monetary matters, but we see in the above statement only a repetition of the argument advanced by the Eastern cordage and rope manufacturers, that for some time to come—at least until an Amer-

ican line was placed in operation between the Islands and the eastern seaboard—the hemp exports from the Islands would be diverted to the western ports, to the disadvantage of the eastern manufacturers, and, more to the point, to the certain loss in trade now enjoyed by the firm of Henry W. Peabody & Co., who handle large quantities of the Insular staple, through their New York house.

We do not believe that a concerted action is necessary for the repeal of this law at present, by sacrificing our efforts for a reduction of the tariff. We have contended that the passage of the Frye Shipping Law was a distinct victory towards the recognition of the status of the Philippines in their relation with the home country. It involves a principle, far more valuable to us at present, as it gives us a precedent for the total abolition of tariffs, by apparently making us a part of the United States, and gives our friends in Congress a powerful lever in influencing the opposition vote. Either we are part of the United States or we are not. If we are, the application of the coastwise laws is justifiable, and paves the way to fuller recognition later on. If we are not to have free trade in connection with it, then the measure is arbitrary, and opposed to all ideas of fair play and justice.

Then we say every interest should stand shoulder to shoulder for the repeal of this obnoxious measure.

For the present, an honest, open discussion of the law, free from selfish arguments, will tend to a better understanding of the subject.

We fail to see the dangers to our commerce so graphically described in the interview mentioned, as the freight rates to Manila from either seaboard of the United States are so regulated by existing commercial conditions that it is quite impossible to advance the rates beyond a certain figure, without further legislation affecting our treaties with foreign countries.

Freights to Manila can never advance beyond the rate from the United States to Hongkong, plus the rate from the latter port to this. The minute that the combination would raise the rate beyond that figure, we would find that American goods would be ordered and purchased through Hongkong, or ordered to be shipped to that port, and there transferred to other bottoms for Manila.

This would be necessary to evade that part of the new law which provides for the confiscation of merchandise shipped direct from the United States to the Islands or vice versa in foreign bottoms, but there is no law, nor could such a law be passed, to prevent the importation of American goods from Hongkong, and there is no tariff law on goods from that port, which bear the Consular certificate of their American origin. If the matter should ever come to this point, and to further protect the shipping monopoly, Congress should attempt to pass a law to prevent this evasion, it would undoubtedly meet with the firm protest of the British government.

This purchase of American goods from Hongkong, to arrive here in foreign bottoms, might mean an increase of fifty to one hundred per cent on the freight from the United States, and subject Manila merchants to a little more delay in receiving their goods, but the wildest flights of imagination could not make the rate jump from \$8.00 to \$28.00, as predicted in Mr. Peabody's interview. Even this method could be obviated by a Hongkong firm freighting a foreign steamer in the United States with cargo ordered from them by Philippine merchants, and re-clearing the ship for Manila direct without even handling it there.

At the present time we fail to see where any existing law could grapple with this evasion of the new law, without diplomatic entanglements with England on the subject of interfering with the trade of her colonies.

The Pacific lines are making strenuous efforts to capture the eastern trade, and are quoting extremely low rates to Hongkong on full cargo lots, touching as low as \$4.00 and \$5.00 per ton. It is hardly probable that they will destroy the opportunity of control-

ling the Manila trade, by making a rate which would allow of unloading and transshipment at Hongkong.

Owing to the absence of an American line plying between the eastern seaboard and the Orient, on the law taking effect it apparently gives the Pacific lines the complete monopoly of carrying hemp to the United States. The western cordage manufacturers would benefit thereby, and the trans-continental lines would reap a rich harvest in transporting the staple across the continent. Which all goes to support the argument that Congress should lose no time in granting the ship subsidy bill, and make it possible for an American line to exist.

It is a poor rule which fails to work both ways, and we see no reason why a cargo of hemp or Philippine products should not be sold in Hongkong, or for that matter in any other free port along the Suez canal route, and there resold to American importers without change of ship. From any view we take of the subject under existing conditions, we fail to see where any great shipping monopoly could strangle the commercial life of the Islands, without the further aid of troublesome and almost dangerous legislation.

INSULAR BUREAU OF AGRICULTURE.

A PRACTICAL REPORT.

The report of the Bureau of Agriculture for 1904 is a most interesting document, replete with good, sound practical observations and remarks on the work of the Bureau, and the agricultural conditions and requirements of the Islands. It shows careful study, combined with what has been hitherto lacking in this department—good every-day horse sense, and a practical knowledge of the problems to be solved.

We all know more or less what our agricultural resources are, and what crops are profitable, and for the present are not hungering for deep scientific botanical studies of the flora of the Islands, nor long-winded, uninteresting reports of special expeditions to determine the color of some new species of butterfly. We can spare this for later on. What we need now are some practical demonstrations of developing the enormous possibilities of the resources in sight, some effort along the line of familiarizing the natives with the use of modern agricultural methods and appliances. Every effort of the department should be concentrated in this direction, and when available a suitable appropriation made to carry out the work successfully.

The new head of the Bureau, Mr. Welburn, is evidently of this same opinion, as his report indicates, and we congratulate the Department of the Interior on the acquisition of such a practical official. We need more like him.

That part of Mr. Welburn's report, reprinted on another page, urging the erection of a model sugar mill on the Government farm in Negros, meets with our heartiest endorsement, and should be acted on as soon as the finances will permit. This, more than anything else, will be an object lesson to the sugar planters, and encourage them to purchase similar machinery.

We have pointed out that the stagnation in the sugar industry of the Islands is not so much a question of tariffs as it is the lack of modern and efficient machinery, but the average planter has no faith in new methods unless they are demonstrated in a practical manner. Once convinced, and he is quick and eager to better his condition. It is to be hoped that when a favorable opportunity presents, this matter will receive the necessary appropriation to carry it through, in the full security that it will bring ample returns on the investment.

THE CEMENT CONTRACT.

It is regrettable that our Insular Purchasing Laws are so laxly formed as to make possible the awarding of a large contract for supplies to a foreign firm not represented in the Islands. We refer particularly to the action of the Consulting Engineer to the Commission in awarding the contract for the supply of 30,000 barrels to the Alsen Portland Cement Co. of Hamburg. There is nothing to complain of against the justness of

the award, as the bids were open to the manufacturers of the world, and the firm mentioned was the lowest bidder, being 2½ cents per barrel lower than the next lowest tender. If every requirement of the rules governing the placing of tenders was strictly adhered to, no argument could be brought forward against the lowest bidder receiving the award. There seems to be, however, a slight technicality, which ordinarily would cause the rejection of the bid, in that a certified check or bond did not accompany it, as exacted by the rules, but was deposited to the credit of the Government in San Francisco.

The main objection to the contract being placed in Germany lies in the fact that the company is not represented in Manila, and in no way helps support the Government, consequently it can readily underbid any local firm who bears these burdens. The policy of the Government has been to purchase in the local market whenever possible, being opposed to making foreign purchases direct, so much so that in many instances orders are placed with local houses, allowing them a 10 per cent profit above the actual cost. The total difference of cost between the two lowest bids amounts to \$750.00.

We strongly urge the passage of some act which will protect our local merchants in government contracts of this nature, for it is absolutely impossible for them to compete with a foreign manufacturer who bids direct. It is a well recognized truism that those who support the Government are entitled to its patronage. This we believe is also the stand taken by the Civil Governor in his last annual report. This is a matter which does not have to be referred back to Washington, to await the action of Congress, but the remedy can be applied by the Commission.

We are not actuated by any trade prejudice in taking this stand. There are plenty of German importing firms here, through whom this tender could have been placed, which would have prevented any adverse comment. As a matter of fact, a Chinese merchant presented tenders in form on this same brand of cement, quoting 2.57 per barrel. The difference between this and the bid from the factory must necessarily represent the merchant's profit plus the cost of conducting business under our laws, or 30 cents per barrel. If the same course of action had been pursued by the Green Island manufacturers, in cutting under their Manila agent, by a direct bid, there is little doubt but they would have secured the contract.

As a remedy to this unsatisfactory state of affairs, which can only result in friction between the Government and the merchants, we suggest that an act be passed requiring foreign manufacturers bidding on Government work to present such bids through some local commission house or duly accredited agent.

WITTON'S MANILA AND PHILIPPINES DIRECTORY, 1904.

The new directory of the city of Manila and the Islands is a marked improvement and advance over all previous attempts in this field, and we welcome the publication as a much needed necessity to the business community. The painstaking care in the compilation and arrangement of the information, and the scope of the work reflect great credit on the publisher, or better said on his energetic representative, Mr. E. R. Reid, on whose shoulders has devolved the labor of preparing the present issue.

The volume appears to be complete in all that is necessary for the average business house, containing, in addition to the names and addresses, much valuable information and data, indispensable to the merchant, and which can only be obtained in official publications. There are ten sections to the work, embracing a street directory, the full text of the new Internal Revenue Law, Customs Tariff and Immigration Regulations, Civil, Municipal, Military and Naval Governmental

directory, and under the miscellaneous section is a wealth of valuable data such as postal regulations, licenses, weights, measures and currency values, time tables, educational, ecclesiastical, and society directories, a complete list of the Philippine coastwise vessels, tariff laws, list of post offices and postmasters and insular telegraph stations, and other information of like nature.

The provincial directory section is of the greatest value to Manila and foreign merchants, as it is revised and up to date, and fills a long felt want. A complete commercial directory of Manila, Iloilo, and Cebu follows in another section, then Trades and Professions, a Ladies' List and General Alphabetical Summary of names and addresses for ready reference.

The book contains many interesting advertisements, which are an index of the leading firms of the Islands, as they are all represented. This alone shows the popularity of the work. A large new folder map of Manila in seven colors, brought up to date, showing the new city limits, street railway routes, etc., as well as a similar map of the Philippines, are inserted.

On the whole, the work merits the praise due to an honest effort to meet the demands of the Islands, and the exterior.

The price is \$5.00, U. S. Currency, and is well worth the expenditure.

The Christmas Bund: We have received from Shanghai the Christmas number of *The Bund*. It contains 80 pages and cover, filled with interesting stories connected with Shanghai life and profusely illustrated in colors and half-tone. The letter press and make up are exceptionally fine, and altogether it is a fine specimen of typographical art.

There are articles on Racing in Old Shanghai times, The Middle Step, an illustrated story of the U. S. Navy, by Fred. Kirk, of the U. S. S. Monocacy, Sports and Paper Hunting, Cricket, Music and Drama, and other entertaining subjects. "In Old Shanghai" is the title of a good story by our old ex-Colonel Venezolano and General Cubano, Excmo. Sr. Don Luis Davidson, who, we note, has gravitated to Shanghai, and is now on the staff of *The Bund*.

The issue is replete with attractive advertisements, an indication of Shanghai's prosperity, and the appreciation of the business houses of the merits of *The Bund* as an advertising medium.

SUPPLY OF CEMENT

An important contract was awarded January 13th by the consulting engineer to the Civil Commission, which will amount to nearly P150,000. It is for the supply of 30,000 barrels of cement to be used in the harbor improvements now being made at Cebu. The award went to the Alsen Portland Cement Company of Hamburg, Germany, and the delivery will be made by the first of April next.

This was one of the most keenly sought for contracts which has been advertised for some considerable time and quite a number of firms submitted bids which were opened December 31 last. The contract price of the cement accepted is \$2.27 per barrel.

PASIG IRON WORKS, MANILA.—On February 15 the Division of Construction and Repairs will relinquish the lease on the Pasig Iron works. The repairing of the various launches will be done after that date by the Coast Guard Bureau at the new slip on Engineer island.

HONGKONG AND SHANGHAI BANKING CORPORATION.—We are informed by the Hongkong and Shanghai Banking Corporation that subject to audit the dividend for the half year ending December 31, 1904, will probably be £1-10 per share with a bonus in addition to the dividend of £1 per share.

To be placed to reserve fund \$1,000,000.
To be written off property account \$200,000,
and to be carried forward to next half year \$1,500,000.

NEW HIGH SCHOOL, PANGASINAN.—Pangasinan is to have a new high school build-

ing. It is to be a two-story structure, 160 feet by 95 feet, the lower floor, consisting of eighteen rooms, to be used for class rooms, library, and laboratories, and the upper story for an assembly room and public meetings.

The building will cost \$27,000 gold, \$15,000 of which is now in the provincial treasury, and the remainder to be furnished by the provincial government.

BENGUET MINES.—Messrs. McMichael and Lambert who have been developing some mining claims in southern Benguet on the Toboy river, said yesterday that they were much encouraged at the reports of Mr. Fox, the assayer in the Government laboratory here, and also from others on the mainland. Mr. McMichael does not think that the general feeling of discouragement toward mining enterprises is justified.

On the four claims they have recorded, assays of gold, silver, and copper have run from \$40 to \$120 a ton. Well-defined fissure veins are to be encountered in the mountains, and with industrious and persisting prospecting such as is indulged in California there are good reasons for expecting some valuable finds.

The country where Messrs. McMichael and Lambert are operating is 38 miles from Dagupan and 16 miles from Benalanan, and the climate is healthful and cool, being at an altitude of over 4,000 feet.

The roads, almost at first hand from nature, are surprisingly good, and the labor employed, mostly Igorrotes, is paid 60 cents conant a day. Mr. McMichael said that there were men prospecting in those mountains, who today were practically penniless but from whom could be picked some, who would be the future rich men of the Philippines, when they made the strike which is always found sooner or later, in countries, the sands of whose rivers contain so many "colors" as do those of these islands—(*Cablenews.*)

CABLE STEAMER, U. S. ARMY.—The quartermaster's department has abandoned the scheme of transforming the transport Ingalls into a cable ship and will instead assign the transport Liscum to the work of cable repairing. The Ingalls will assist the Liscum on her present run.

MANILA STREET IMPROVEMENTS.—More improvements have been authorized by the municipal board, and the city engineer will at once begin the work of extending the block pavement along the lines of Plaza Cervantes to the curb line of Calle Anloague and along and across Calle Carenero on the lines of its intersection with Calle San Gabriel. This was decided upon in response to petitions from business houses in that vicinity.

Another improvement will be the work of repairing the Luneta barracks, which are to be made the future home of the police department.

AYALA BRIDGE CONTRACT LET.—The contract for the building of the new Ayala Bridge has been awarded by the municipal board to the Atlantic, Gulf and Pacific Company, which agrees to construct the bridge and deliver it complete for \$64,868 within fifteen months. The company will begin work at once and expect to finish their contract within a year.

AMERICAN CAPITAL FOR MANILA.—La Fabrica de la Paz y Buen Viaje, one of the largest cigar and cigarette factories in the Philippines, will shortly become the property of an American firm of capitalists, says the *Manila American*.

This factory has been in operation for many years in Manila under the ownership and management of the Lopez family, natives of Manila.

The purchase price is reported to be P500,000 and the purchasers intend to enlarge the plant, and enter into active competition with the greatest manufacturers in the islands.

PHILIPPINE HEMP INDUSTRY



FIELD OF ABACA PROTECTED BY NUMEROUS SHADE TREES, SORSOGON PROVINCE, LUZON.

INTRODUCTION.

The fiber produced by the plant *Musa textilis* is known throughout the civilized world as hemp, manila, or manila hemp. This name "hemp" is misleading as, properly speaking, hemp is the fiber produced by the plant *Cannabis sativa*. The two fibers are quite different, manila hemp being a structural fiber obtained from the leaf sheath, while true hemp is a bast fiber extracted from the inner bark of the stem. The name "abacá" is used in all parts of the Philippine Archipelago to designate both the plant, *Musa textilis*, and the fiber, manila hemp.

Abacá enjoys the unique distinction of being strictly a Philippine product. The plant has been introduced into India, Borneo, the West Indies, and other parts of the world, but only in the Philippine Islands has the fiber ever been successfully produced as an article of commerce. This fact has undoubtedly been of great advantage to the Philippine planter. The lack of competition, however, has resulted in the continuance of obsolete methods of cultivation and fiber extraction, better suited to the eighteenth than to the twentieth century.

The opportunities for increasing the pro-

duction of abacá in the Philippines are almost unlimited. Enormous areas of good abacá land are as yet untouched, while the greater part of the land already under cultivation might yield a greatly increased product if more careful attention were given to the various details of cultivation. The introduction of irrigation will make possible the planting of abacá in many districts where it is now unknown. The perfection of a machine for the extraction of the fiber will increase the entire output by nearly one-third, as this amount is now lost by the wasteful hand-stripping process.



LABORER'S HOUSE SURROUNDED BY ABACA PLANTS, MOUNT IRIGA, CAMARINES PROVINCE, LUZON.



A FIELD OF ABACA AT THE SAN RAMON GOVERNMENT FARM.

In each successive step, from the first selection of the land to the final treatment of the fiber, the progressive planter should have as his ultimate object the production on a given area of a maximum quantity of superior fiber at a minimum cost. With the industry established and conducted on this basis, abaca will continue to hold its place as the first product of the Islands.

BOTANY.

The common banana, *Musa sapientum*; the plantain, *Musa paradisiaca*; and abaca, *Musa textilis*, are closely related species of the same genus. The plants of these three species resemble each other both in appearance and in habits of growth. The banana plant produces a fiber similar in appearance to abaca, but lacking strength. The fruit of the abaca somewhat resembles that of the banana, but is smaller, filled with black seeds, and of no economic value.

The abaca plant is a large tree-like herb 15 to 25 feet high. The stem arises from a perennial rootstock. A single rootstock usually bears a cluster of from 12 to 20 stalks or shoots. The stem is cylindrical, green, 15 feet or more long, and is formed of the overlapping leaf sheath. The leaves are oblong, deltoid at the base, bright green above, glaucous beneath, petiole from 1 to 2 feet long. The flower bud remains at the root until after the plant has

attained its full size and then pushes rapidly upward. From the center of the leafy envelopes at the top of the stem emerges the flowering spike which varies greatly in size and length with different species. The flowers are borne in clusters arranged at intervals along the rachis, each cluster being subtended by a large membranous bract. These bracts are very conspicuous, entirely cover the half-whorls of flowers, and are so densely laid one upon the other that they form a kind of flower cone. The cone is usually a dull violet color, smooth and glossy. The fruit is green oblong-trigonal, 2 to 3 inches long, 1 inch in diameter, not edible, but filled with large, black seeds.

While the abaca plant quite closely resembles the banana the two may be easily distinguished. The abaca is ordinarily smaller than the banana, its stem is more slender and of a darker color. The abaca leaf is a darker green, narrower, more tapering, and of a firmer texture than that of the banana. A peculiarity of abaca is a dark, thread-like line running lengthwise on the right-hand side of the under surface of the leaf.

There are many different varieties of abaca, often 12 or 15 in one locality. The principal differences between these varieties are in color and shape of stem, color and size of leaves, greater or less tendency to produce suckers,

and in development, resistance, and strength of fiber. The desirable qualities in an abaca plant are: A plant which is hardy, grows rapidly, and withstands drought; which has a stem long, thick, and not too tapering, and which produces fiber in abundant quantity, of good quality, and easily extracted.

DISTRIBUTION.

Abaca is distributed throughout the greater part of the Philippine Archipelago. The area where it is successfully cultivated lies, approximately, between the parallels 6 and 15 north latitude and the meridians 121 and 126 east of Greenwich. The most favorable locations are along the eastern and southern coasts. It may be cultivated up to 1,000 or 1,200 meters above sea level, but above this height the temperature is not favorable to its best development. The more important abaca provinces and islands are as follows: Camarines, Albay, Sorsogon, Masbate, Mindoro, Marinduque, Samar, Leyte, Panay, Negros and Mindanao. It is grown to some extent in other provinces of Luzon and on many of the smaller islands. The amount of land at present under cultivation, or that which is suitable for abaca, can not be very definitely estimated, inasmuch as the plant is often grown on small and widely scattered areas back in the mountains. The methods of propagation, of cultivation, and of fiber extraction are all very similar in the different parts of the Archipelago. The following is a brief statement of the local conditions in several of the more important abaca-producing provinces:

Camarines.—Abaca is cultivated in 27 of the 35 towns of this province. There are three important abaca districts—that of Daet, in Camarines Norte, the Lagonoy districts, in the eastern part of the province, and the Mount Iriga district, in the south. These different districts are located on the slopes of old volcanoes, where the soil is rich, deep, and well drained. In these locations abaca has been successfully grown on the same land for over forty years. The important varieties in Camarines are Samorong puti (white abaca), a highly esteemed variety and a heavy producer of excellent fiber; Samorong pula (yellow abaca), also a heavy producer but not yielding as good a quality of fiber; Isarog (mountain abaca), a shorter plant yielding a very white fiber; Quidit, a tall, slender plant producing a long but rather delicate fiber; Saba, butuhan, and tindoc are varieties of banana, the fibers of which are utilized for making fine and delicate fabrics. Abaca land is valued at from \$30 to \$50, local currency, per hectare. Wages are from 50 to 75 cents per day. Carabaos are scarce. The trees used for shade are dap-dap, ilang-ilang, dau, biluang, alum, and adgao. Cocoanuts, cacao, and coffee are grown on the same land with abaca. A large amount of fiber is used locally for making cloth, cordage, and other materials.

Albay.—Albay is the leading abaca-producing province of the Islands. It is estimated that half of its area is devoted to abaca. The soils of Albay have been largely derived from the ashes and dust of the Mayon Volcano, and are quite similar to those of Camarines. The rainfall, showing an annual average for six years of 118.42 inches, is heavier than that of any other abaca province. The important varieties of abaca are Samorong itom, Samorong pula, Samorong puti, Samina, Inisarog, Sabaon, and Canaraon. Of these varieties, the first three are superior, as they grow rapidly, resist drought, and produce a good quality of fiber. Cultivated land is valued at \$200 to \$300 per poisocon (3.472 acres). Labor is worked on the share system. Carabaos can be bought for about \$150 each. The abaca shade trees are dap-dap, taloto, naga, and anonang. The relative production of different grades of fiber is as follows:

	Per cent.
Superior current	1
Current	7½
Dudoso (low current)	78



Photograph by Squires & Bingham.

STRIPPING ABACA (FIRST PROCESS).

Seconds..... 9
 Reds..... 4
 Strings..... ½

The exports of fiber from Albay for 1903 were 263,585 bales. The manufacture of sinamay (abacá cloth) is an important local industry.

Sorsogon.—Some of the best abacá produced in the Islands comes from Sorsogon. The greater part of this province is suitable for abacá

cultivation, and many large plantations are now being worked. In the southern part of the province is the large volcano, Bulusan, on the lower slopes of which are many fine "lates," or abacá plantations. The soils are rich, mellow loams similar to those already described. This province has been at somewhat of a disadvantage in having poor harbor facilities and but few roads. The latter are now being improved so that Sorsogon,

with its very favorable soil and climatic conditions, should continue to rank as one of the leading abacá provinces.

Leyte.—In quality of fiber produced Leyte is nearly, if not quite, the equal of Albay. Abacá is grown in nearly all parts of this island, some of the best fiber being produced in the southern towns around Malitbog Bay. In this district the country is generally mountainous, but in the northern part



Photograph by Squires & Bingham.

STRIPPING ABACA (SECOND PROCESS).

of the island we find abacá largely grown on the lowlands. The soil in these locations is a heavy silt loam of alluvial origin. Farther back toward the mountains the soil becomes more sandy. The fiber produced in the northern part of Leyte is forwarded to Tacloban and Carigara, and from these points is shipped to Manila.

Samar.—The greater part of the interior of Samar is a rough, mountainous country, with no roads and poor trails. For some years this island has been in a very unsettled condition, so that there has been but very little development and many old plantations have been abandoned. Nearly the entire production of fiber is in the northern half of the island, some of the best coming from the valley of the Candara River. Calbayog, Catbalogan, and Borongan are important shipping points. The two principal varieties of abacá grown in Samar are jilajas, a small plant yielding a white, strong fiber, and lawsig, a larger plant yielding more fiber but of an inferior quality. Labor is worked on the share system. Carabaos are scarce, and are valued at about \$130. But a small portion of Samar is under cultivation. Land suitable for abacá may be found in almost any part of the island.

Davao.—The district of Davao, in southeastern Mindanao, is one of the most promising of the abacá-producing provinces. The climatic conditions in this district are extremely favorable, there being a heavy and evenly distributed rainfall, a high degree of humidity, and freedom from severe winds. The soil is a rich, deep, medium loam, and large areas which have already been cleared of the heavy timber are now in good condition for abacá planting. The fiber produced in Davao is of excellent quality and always commands a high price in Manila markets.

CLIMATE.

A suitable climate is the first and most important requisite for successful abacá cultivation. The four conditions of climate which directly affect the growth of abacá are the amount and distribution of rainfall, the degree of atmospheric humidity, the frequency of heavy winds, and the degree of temperature.

The structure and habits of growth of the abacá plant are such that it requires a large and continuous supply of moisture. We invariably find that the provinces where abacá cultivation is the most successful are those having a heavy and evenly distributed rainfall. In many parts of the Philippine Islands there is a long and pronounced dry season, during which time there is no rainfall whatever. Unless water is available for irrigation, abacá can not be grown in these districts. A period of six weeks' drought will check the growth of the plant, and longer periods of dry weather will injure both plant and fiber. In Albay, Davao, and certain other localities, while there is a so-called wet and dry season, seldom does a week pass without heavy showers. The actual amount of rainfall required by abacá will be modified by the nature of the soil, the degree of atmospheric humidity, and the methods of cultivation.

The growth of abacá is influenced very directly by the relative humidity of the atmosphere. The degree of atmospheric saturation usually follows the rainfall in its variations, so that in districts where there is a heavy precipitation there are also many days of excessive humidity, the effect of which is almost the same as actual rain. The atmospheric conditions in southern Mindanao are more favorable for abacá cultivation than those of any other part of the Archipelago.

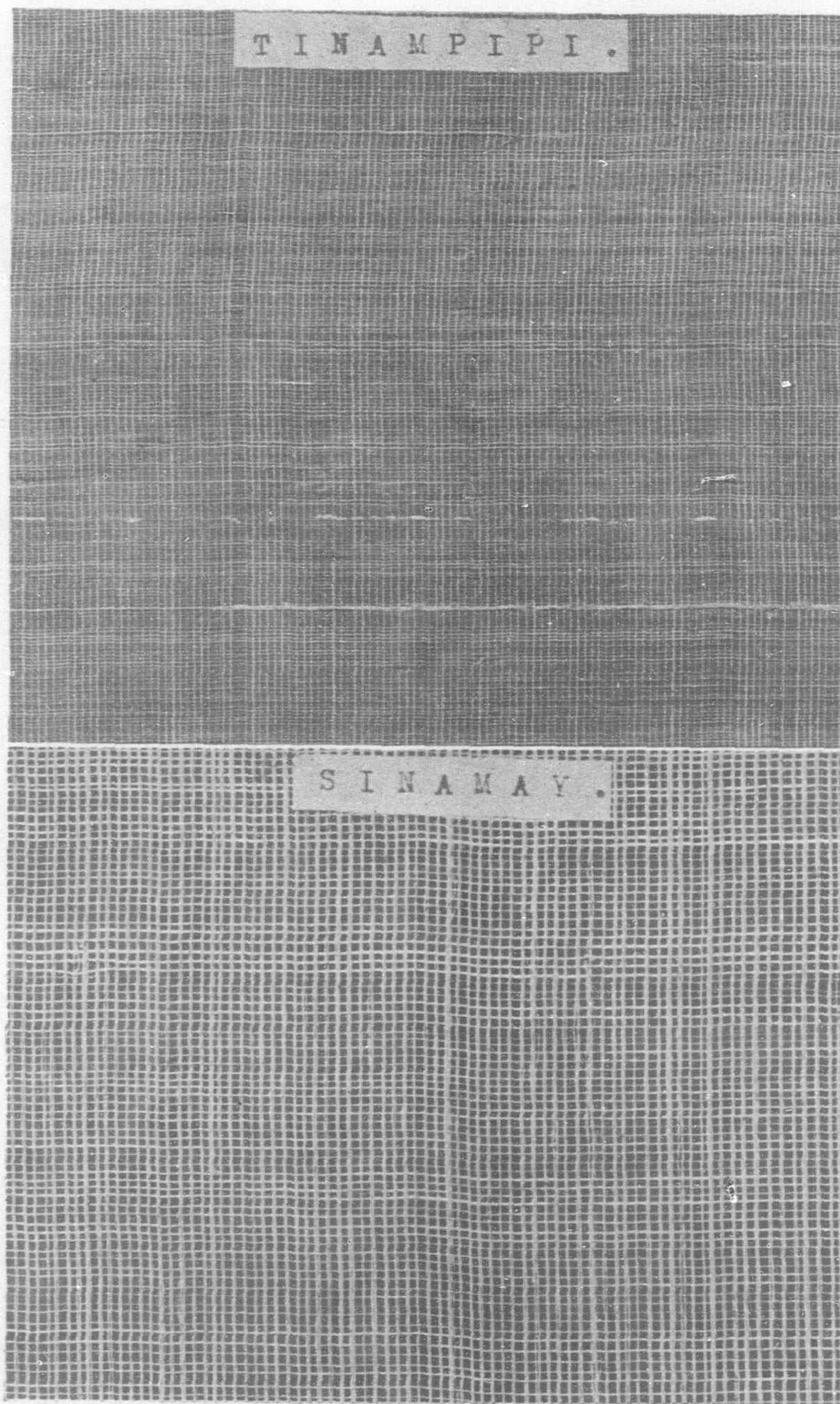
No investigations have been made relative to the degree of heat necessary to the growth of the abacá plant. If a sufficient amount of moisture is available to supply the heavy evaporation it can doubtless withstand a high degree of temperature. A low temperature is very unfavorable to its best development. The maximum and minimum temperatures for Leyte and Albay—the two most celebrated

abacá-producing provinces—for one year were 33.80° to 22° C. for Leyte, and 32° to 18.20° C. for Albay.

SOIL.

Next in importance to favorable climatic conditions is the selection of a suitable soil. The appropriateness of any particular soil must depend in a degree on the relative conditions of climate and location. For instance, in a district having a very heavy rainfall and where the land is low and flat a soil of certain consistency would become over-saturated, while the same soil, if the land were sloping and the rainfall less heavy, might be sufficiently well drained. The qualities to be selected are a rich, mellow loam of lasting fertility, cool and moist, but at the same time well drained, containing a large amount of decayed vegetable matter, and preferably of volcanic origin.

Throughout the important abacá districts of southern Luzon we find nearly all of the large plantations situated on the lower slopes of old volcanoes. The soils in these locations are deep and fertile, well drained, and in every way desirable. As abacá is grown on the same land without replanting, fertilizing, or rotation for a period of at least twelve or fifteen years, the soil must be of lasting fertility in order to stand this long drain on its resources. The demands of the plant



for a constant supply of moisture, and its equal dislike for over-saturation, require a condition of medium consistency, a soil that will retain moisture without becoming wet.

The foothills and lower mountain slopes covered with a medium growth of timber furnish the ideal location for a plantation. Here we have land well drained and shaded, and filled with decayed vegetable matter. On such land abacá can be successfully grown or an almost indefinite length of time.

THE PLANTATION.

The prospective planter must consider three things: The selection of a location, the preliminary work of establishment and organization, and the system and method by which the plantation is to be developed.

The location should be, if possible, in some district where abacá is already grown. This will be the surest way of determining that soil and climatic conditions are suitable, and will also guarantee a supply of suckers, or "seed," for starting the new plantation. The supply and quality of available labor; the conditions of roads and the facilities for water transportation; the supply of water, wood, and building materials, and the distance from a market are all matters that should receive consideration.

The site having been selected, the boundary lines should be carefully located and the plantation mapped out with a view to future development. At some central point, where there is a supply of good water, the necessary buildings may be erected. These will include a residence for the manager, a storage shed for tools and implements, and a shelter for animals. As soon as this preliminary work is finished the clearing and planting should be commenced.

The most difficult problem which the tropical planter has to face and that which more than any other one thing will determine his ultimate success or failure, is the manner in which he controls and directs his labor. To have available at all times as many workmen as can be used to advantage, and to so handle them as to secure the best results, requires a thorough knowledge of the native character and an infinite amount of tact and patience. When the plantation is first started arrangements should be made for building a native village of sufficient size to accommodate all laborers needed on the plantation, together with their families. By this method the plantation manager will always have under his direct control a fairly reliable supply of labor; and if this system is properly carried out the workmen will be more contented, better satisfied, and in every respect more easily handled than if secured in any other way.

PREPARATION OF THE SOIL.

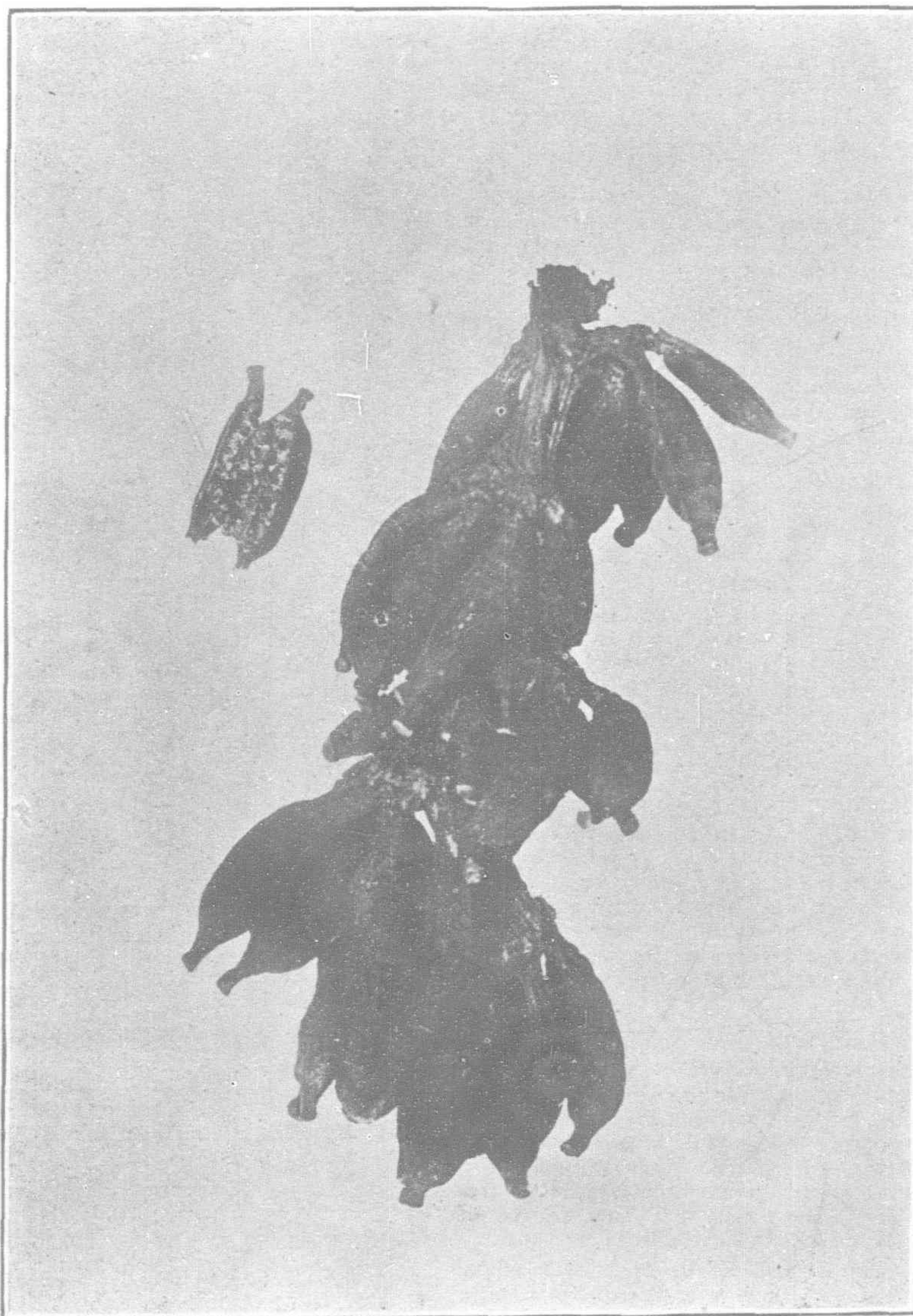
The land should be first cleared of all growth except such trees as are to be left for shade. Any valuable timber having been removed, all other material is left on the ground for about thirty days, or until thoroughly dry, and is then burned. This burning clears the ground of all waste, destroys a portion of the seeds of weeds, and leaves an amount of ash, the potash salts of which furnish a valuable fertilizing material. All clearing and burning should be finished before the close of the dry season.

The preparation of land for abacá must vary with different local conditions. The most common practice is, after the land has been burned over, to plant at once, without any preliminary plowing or other preparation of the soil. The abacá shoots are set out at regular intervals, camotes (sweet potatoes) being planted at the same time. The latter grow rapidly, soon cover the ground with a dense growth, and thus to a large extent prevent the growth of weeds. This method may be followed where it is impracticable to secure labor, animals, or implements, or where the land cannot be thoroughly cleared. It is not, however, a system to be recommended. Where it is practicable to do so, the land should be plowed and harrowed before planting commences. This system will be more expensive at the outset, but the more rapid growth of the crop and the increased yield on land thus prepared will, in the end, more than pay for the additional first cost.

PLANTING.

The land, when ready for planting, should be lined out with a cord or bamboo poles and small stakes driven at equal distances apart where the plants are to be set out. Some of the plants will fail to grow, and without these stakes it will be difficult to determine the exact spot for making the new setting. The rows should be from 9 to 12 feet apart each way, depending on the size of the variety of abacá planted and on the nature of the soil. This will give from 750 to 1,350 plants to the hectare (2.471 acres). The most favorable time for planting is near the beginning of the rainy season.

A new plantation may be started with seed, suckers, or root sections. The one advantage of using seed is that the first cost is less. This method, however, is seldom followed, as it requires from six months to a year longer for the plants to mature from seed than from suckers or root sections. Good seed is difficult to secure, and even when every possible precaution is taken it often fails to ger-



THE FRUIT OF ABACA

minate. The seeds of the ripe fruit should be selected, well washed to remove the pulp, and dried. Before planting, soak in water for some five hours and use only the seed which sinks to the bottom. Prepare the seed bed carefully in moist, fertile soil and sow in drills 1 to 2 feet apart. The plants should be large enough to set out in the field at the end of nine months to a year.

The ordinary method of propagation is by the use of suckers. These suckers grow from the root of the "mother plant," and can be obtained on any large plantation at a cost of from \$15 to \$25 per thousand. Care should be taken to secure suckers that are well developed and in good condition. It is always safe to allow for the loss of one-fourth the original number ordered during the period of transportation and after planting.

The use of root sections is a very desirable method of propagation. When a stalk of abacá is cut for fiber a portion of the root may be removed and set out to start a new plant. These roots are cheaper, more easily transported, and more liable to grow than suckers.

It is customary to plant some other crop on the same land with abacá. This system is advantageous for several reasons. If the ground is sloping, some herbage plant is necessary to prevent soil washing. Such plants will also prevent, to a considerable extent, the growth of weeds and will yield a product of more or less value. Camotes is the crop most commonly used. This plant grows rapidly, soon covers the ground with a dense mat of vines which choke out the weeds, and it also furnishes a supply of food for the laborers

on the plantation. Corn is very desirable, and it has the additional advantage of furnishing a much-needed shade to the young abacá plant. Where soil conditions are favorable, coconuts may be grown on the same land with abacá. Coconuts and abacá make a very profitable combination, as the abacá can be harvested until after the coconut grove comes into bearing. Other crops sometimes used are mountain rice, cacao, and coffee.

CULTIVATION

Under the present system, where camotes are planted with abacá, the only cultivation given is to keep the soil loose immediately around the abacá plants, thus allowing the free growth of suckers, and the frequent clearing of grass and weeds. It will be necessary to go over the plantation every two months, or oftener, during the first two years. After the abacá begins to shade the ground the growth of weeds will be less, and after the third year one or two clearings every twelve months will be all that is required.

When the land is thoroughly cleared and plowed before planting, and the abacá is set in straight rows, subsequent cultivation may be done with animals. Under these conditions one native laborer with a carabao can take care of 20 acres at a cost of \$15 per month. At the San Ramon Government Farm both of the above methods have been followed. The results have shown conclusively that where abacá is kept thoroughly cultivated its development is much more rapid and the condition of the plants is far superior than where it is grown with camotes and without cultivation.

SHADE.

The relative advantages and disadvantages of growing abacá under shade is a subject concerning which there is great difference of opinion and one which must be largely decided by the existing local conditions. In any province where there is a pronounced dry season the shade tree may be considered an absolute necessity. Throughout the greater part of the abacá-growing districts it may probably be used to advantage. In certain portions of southern Mindanao, and in other localities where the rainfall is very heavy and is evenly distributed, shade may be dispensed with altogether.

The functions of the properly selected shade tree are as follows: It protects the young abacá plant from the direct and glaring rays of the sun, such protection being very necessary at this stage of growth; it prevents, in a measure, the great evaporation which would otherwise take place from the broad surface of the leaves of the fully developed plant; it brings toward the surface of the ground, within reach of the roots of the abacá, a certain amount of soil moisture; it protects

or some other quickly grown crop should be planted to protect the young abacá during the first months of its growth.

FERTILIZERS.

Commercial fertilizers have seldom, if ever, been used in the growing of abacá. Virgin land, where the soil is deep, fertile, and filled with decayed organic matter is usually selected for this purpose. When the plant is cut and the fiber is extracted all of the waste material, which constitutes by far the greater part of the plant, is left on the ground. This practice results in the return to the land each year of a large amount of organic matter, and tends to keep up the fertility of the soil. Under these conditions abacá has been successfully grown on the same land for over forty years.

The rapid growth of abacá on land that has been recently burned over, together with the fact that chemical analysis shows a large percentage of potash in the composition of both plant and fiber, indicates that the application of ashes or other potash fertilizers would be attended with beneficial results. Until a series of systematic experiments with different

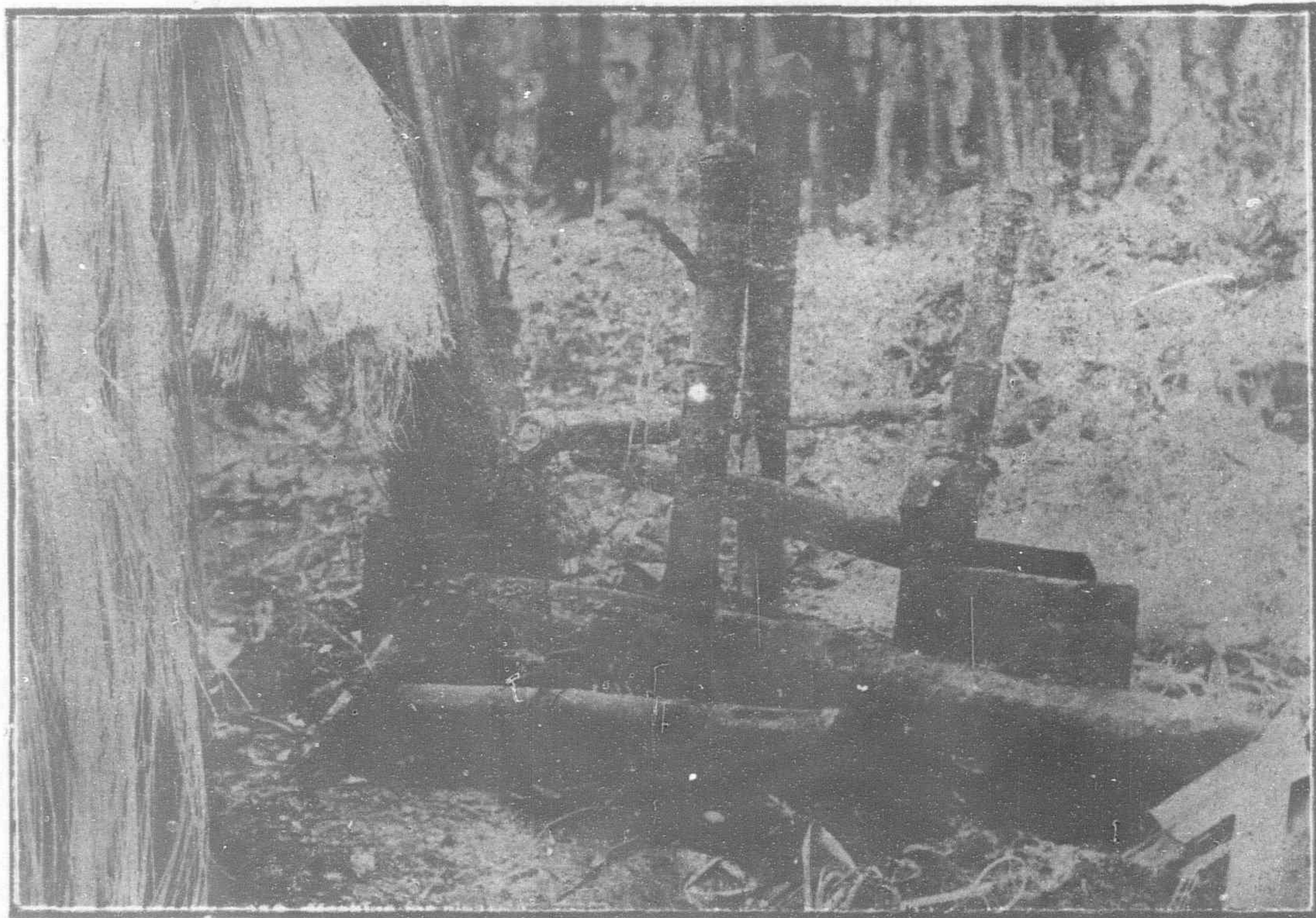
The introduction of any thorough system of underground tile drains, or the use of any very expensive methods of irrigation, can hardly be considered practicable where the amount of cheap unoccupied land is as large as it is at the present time in these Islands. On many plantations, however, there are opportunities for utilizing, at little cost, an available water supply, or of draining by means of surface ditches, the cost of which would be inconsiderable when compared with the beneficial results.

ENEMIES.

The enemies and accidents to which abacá is subject are but few. The damage done is usually slight and comparatively easy to correct.

Severe winds, which strip and tear the leaves of the plant, will retard its development, and a typhoon may do a great amount of damage. The selection of a protected location and the planting of trees for wind-breaks will, in all ordinary cases, overcome this difficulty.

Extreme drought is another unfavorable climatic condition. A long dry season seldom



NATIVE MACHINE FOR CLEANING HEMP

the plant during all stages of growth from severe winds.

The objections to the shade tree are that when it has to be planted it is an additional item of expense; it interferes with the work of cultivation and takes up a considerable amount of land which might otherwise be planted to abacá. If its leaves are large more or less moisture will be evaporated from them and wasted, and if its roots are shallow the abacá plant will be robbed of a portion of its food. If planted too closely the abacá will not receive a sufficient amount of light and heat and its development will be retarded.

If shade trees are to be left standing when new land is cleared, or if trees are to be planted for this purpose, varieties should be selected which have tall trunks, narrow leaves, and deep-feeding roots. Such trees will give a light shade, will not impede the rainfall, and their roots will be beneficial, rather than detrimental, to the abacá. There are many different varieties of trees in the Islands which are suitable for this purpose, among which may be mentioned the dap-dap, raran, tanguil, anonang, pili, and barobo. The number of trees required will vary with local conditions. Ordinarily they should be from 20 to 30 yards apart. In all cases where shade trees are not used, corn

fertilizers have been made, their relative value for abacá or the practicability of their application can not be definitely stated.

DRAINAGE AND IRRIGATION.

The most important requisite for successful abacá cultivation being an abundant supply of water, and one of the most undesirable conditions being a wet soil, the value of both irrigation and drainage becomes very apparent. Notwithstanding these facts, no systematic attempt has ever been made either to drain or to irrigate an abacá plantation. Locations are selected on sloping land and where there is an abundant rainfall. If nature has not directly supplied all of the required conditions, the situation is considered unsuitable. The direct results of growing abacá with irrigation in districts where the rainfall is insufficient and where the degree of atmospheric humidity is low have yet to be determined by experiment. Unquestionably, however, the introduction of even simple methods of irrigation and drainage would largely increase the area that might profitably be planted to abacá. The worst enemy of the planter is a long dry season. If this condition could be met with an abundant supply of water this danger would be largely removed.

occurs in the localities where abacá is most largely cultivated, and the effects of dry weather are in a measure overcome by the use of shade trees. Abacá should not be planted in the provinces where the rainfall is not fairly evenly distributed unless some means of irrigation are available.

Wild pigs, deer, and carabaos occasionally do some damage, and it is usually necessary to fence a plantation. Locusts and ants are not to be feared. The larvæ of two insects, known locally as "tamilos" and "amasog," sometimes attack abacá. The first of these is about 4 centimeters long, has a body divided into 12 segments, a soft, white skin, a head of a dark-red color, and strong mandibles. The latter is about 1½ centimeters long with a body of uniform dimensions and white in color. When a plant is affected, a relatively large hole is found in the trunk and the leaves turn yellow. Such a plant should be immediately removed and burned. Fortunately but few plants suffer from these insects and the total injury which they do is insignificant.

HARVESTING.

The first stalks will be ready for cutting at from twenty months to three years after planting. The time required for development varies

considerably with different varieties and in different localities. After the first harvest it is customary to cut over a plantation about every eight months.

The abacá plant, when mature, consists of a group or cluster of from 12 to 20 stalks, all growing from the one root. These stalks are in all stages of development, but usually two or three will mature and can be cut at about the same time. The stalk is ready for cutting between the time of the appearance of the flower and the development of the fruit. If cut either before or after this period an inferior quality of fiber will be obtained. When the plant is in flower the large violet-colored flower bracts fall to the ground, making it an easy matter when passing through the field to select the plants which are ready for cutting.

The stalk is cut with a bolo or knife having a sharp blade. This cutting should be made 2 or 3 inches from the ground and on a slant. If a perfectly horizontal cut is made, water will collect on the stump, causing it to rot and thus injuring the root and the remaining shoots. After the stalk has been cut the leaves are trimmed off and it is then ready for the first operation of fiber extraction.

EXTRACTION OF FIBER.

The extraction of fiber should commence within twenty-four hours after the cutting of the stalk. If left a longer time than this the fiber is liable to become discolored and weakened. As the abacá trunk is heavy and the fiber-extracting apparatus is light and easily transported, it is customary to move the latter from place to place and to extract the fiber near the spot where the plant is cut.

The trunk or stalk of abacá is often 12 or 15 feet long and from 1 to 1½ feet in diameter. This trunk consists of a small, central fleshy stem, 1 or 2 inches in diameter, around which are a large number of thick, overlapping layers, each layer being the stem or petiole of a leaf. The fiber is obtained from the outer portion of these leaf stems. The process of fiber extraction consists of two distinct operations: First, the removal of the ribbon-like strips of fibrous material from the leaf stems, and, second, the separation of the individual fibers by pulling these ribbons under a knife.

The laborer, sitting on the ground with a trunk of abacá across his knees, inserts under the bark of one of the leaf stems a small, sharp piece of bone called a "locnit," and pulls off a fibrous strip 1 to 3 inches wide and as long as the trunk. One stem will yield two or three such strips. When these fiber strips have been taken off, the remaining fleshy material is removed and each consecutive layer is thus worked, down to the central stem of the trunk. The fiber obtained from the three or four outer layers, which are green and hard, will be coarse and dark colored, while that coming from the layers nearest the center of the trunk will be very fine and white. The latter is used for the manufacture of various kinds of cloth.

When a quantity of these fiber strips has been collected they are carried to some central point where a shed has been erected and an apparatus set up for stripping the fiber. The shed consists of a frame of bamboo poles covered with abacá leaves. The stripping apparatus, or "panguijan," is simple both in construction and in operation. It consists of a log set in a horizontal position 1 or 2 feet from the ground. On the top of this is fastened a block of smooth hard wood. Over this block is placed a bolo having a blade about 1 foot long and a handle 1½ feet long. A rattan is attached to the end of the knife handle and connected with a bamboo spring above. Another rattan passes from the handle to a foot treadle. The bamboo spring holds the knife down upon the block, its pressure being easily regulated by lengthening or shortening the rattan. By means of the foot treadle the operator raises the knife when he desires to insert or remove a strip of fiber.

In the process of stripping the operator holds in his right hand one or more of the fiber ribbons and also a short, round piece of wood. These strips are inserted under the knife and are drawn through with a quick, steady pull. The ribbon is then removed and reversed, the

cleaned end being wound three or four times around the stick. This process of drawing under the knife removes all of the pulp or fleshy material, leaving in the hand of the operator a small bunch of clean, wet fiber. As the fiber is stripped it is usually assorted into two classes. The work of fiber extraction, while apparently simple, is very exhausting, even for the experienced operator, and many laborers are ruptured by the excessive strain of pulling the fiber strips under the knife. It is a fair day's work to strip 1 arroba (25 pounds), and the fiber stripper will usually work only two or three days a week.

All of the fiber produced in the Islands is extracted with this simple apparatus. The color and strength of the fiber—two most important qualities—are determined almost entirely by the manner in which it is cleaned. Two factors in the process affect the quality of the product, the condition of the knife blade and the degree of pressure with which the knife is held upon the base block. With a serrated knife loosely fastened the fibers are only partially separated and only a portion of the pulp is removed; the work is easy, the yield large, and the fiber is inferior in quality. With a knife having a smooth-edged blade and held firmly on the base block, the work of extraction is much more difficult and the waste is greater, but a very superior fiber is obtained. It has been determined by experiment that the same plant will produce either a very superior or a very inferior grade of fiber, depending on the kind of stripping knife used. As a result of using serrated knives the markets have been flooded with enormous quantities of inferior fiber, and cordage manufacturers are continually making complaint about the quality of Manila hemp. The whole future of the industry depending, as it must, on the position which abacá continues to hold in the world's markets, it is manifestly to the interest of every producer to discourage the use of the serrated knife.

FIBER-EXTRACTING MACHINERY.

Numerous attempts have been made to extract abacá fiber with machinery. A number of the machines used have been in a measure successful, but some obstacle has always prevented their coming into any general use. The greatest difficulty has been that abacá, being a very long fiber, would not bear the strain of full tension while being cleaned. It has been necessary to wind the fiber around a cylinder or to hold it in two or three places with a clutch in order to lessen this tension. Cylinders of various kinds of material have been used, but all have resulted in a discoloration of the fiber. The machines thus far constructed have all been based on the old hand process of extracting the fiber by stripping. Inasmuch as sisal and other vegetable fibers are now successfully extracted by machinery, and as several American inventors are devoting their attention to the perfection of a machine for extracting abacá, it is probable that such a machine will come into use before many years. The fiber-extracting machine for abacá should be simple in construction, strong, cheap, and portable. It must not break, tangle, discolor, waste, or in any way injure the fiber. The introduction of suitable machinery will do more than any other one thing to advance the interests of the abacá industry.

AFTER-TREATMENT OF FIBER.

Abacá after being stripped is hung on bamboo poles to dry. This drying takes from three or four hours to two days. When thoroughly dry the fiber is collected, tied up in hanks or bundles, and in this condition is shipped by ponies, carabaos, or cargadores to the nearest market. It is there sold to a Chinese middleman or to the representative of some one of the large exporting firms of Manila. When the fiber reaches the warehouse of the exporter it is carefully sorted into different commercial grades and is then baled, each bale weighing 2 piculs (275 pounds).

When fiber is to be used locally for the manufacture of cloth it undergoes a much more elaborate process of treatment. The leaf stems in the center of the stalk are selected and the fiber is often drawn several times under the stripping knife. This gives a product that is

fine, soft, and white. If to be used for the finest textures, it is then placed in a wooden bowl and beaten with a mallet until the required fineness and elasticity are obtained. This process gives a fiber that is almost silk like, and some of the cloth made from the best quality of abacá rivals in delicacy and beauty the celebrated fabrics of piña and jusi.

DESCRIPTION OF FIBER.

Abacá fiber of good quality is from 8 to 12 feet long, of a glossy white color, very light and strong, and of clean, even texture. As a cordage material it has no superior, its chief value, particularly for ship's ropes, being its relative lightness and strength. The strength of abacá compared with that of English hemp is indicated by the following figures: A manila rope 3¼ inches in circumference and 2 fathoms long stood a strain of 4,669 pounds before giving way. The English rope of the same size broke with 3,885 pounds. In a second test with a rope 1¾ inches in circumference the manila broke with 1,490 pounds, and the English with 1,184.

YIELD.

The yield of fiber varies greatly, depending upon the variety of the plant, the soil and climatic conditions, and the methods of fiber extraction used. Under favorable conditions the annual yield will average from 12 to 16 piculs of dry fiber per hectare (687.5 to 967.6 pounds per acre). The average yield throughout the Islands is probably below this figure, often not exceeding 6 piculs per hectare. Under careful management the yield may be brought up to 20 or 25 piculs per hectare. From one-third to 1 pound of fiber is obtained from a single stalk. In southern Mindanao, the estimate is 212 stalks for 1 picul of fiber. With 1,250 plants to the hectare and an annual yield of 4 stalks per plant, the returns for 1 hectare would be 23.6 piculs, or 3,245 pounds of fiber.

VALUE.

Owing to the largely increased use of binder twine the prices paid for cordage fiber are much higher at the present time than they were some years ago. The fluctuations in the abacá quotations are indicated by the following table:

Manila quotations for "current abacá." 1

Year	Maximum	Minimum
1885.....	\$9.25	\$6.75
1888.....	17.00	7.25
1890.....	14.50	8.62
1892.....	10.87	8.12
1894.....	9.00	6.00

1 Local currency.

The Manila quotations on March 17, 1904, were as follows:

Leyte—	
Good current.....	\$27.00
X current.....	26 00
Superior.....	23.50
Second 1.....	21.75
Second 2.....	18.50
Second 3.....	16.75

The relative value of abacá and other Philippine exports is shown by the following table of values for the fiscal year 1901:

Article	Amount	Per cent of total exports
Manila hemp.....	\$14,453,110	62.3
Copra and cocoanuts.....	2,663,340	11.47
Sugar.....	2,293,075	9.88
Tobacco, cigars and cigarettes.....	2,217,728	9.56
Coffee.....	6,616	.02

USES.

Abacá is, primarily, a cordage fiber. Its most important use is in the manufacture of various classes of cordage, ropes, and cables. Enormous quantities of the fiber are used in the United States for making binder twine. Because of its lightness, strength, and durability manila hemp is considered superior to any other fiber for ship's ropes and cables. From the old and disintegrated ropes is made the well-known and valuable manila paper. In Europe, especially in France,

many different articles of clothing such as shirts, vests, pantaloons, veils, crapes, neck-erchiefs, robes, and women's hats are manu-factured from abacá. These materials are highly valued, both for their beauty and durability. The fiber is also used to some extent for upholstery, packing, and brush making.

In the Philippine Islands a considerable quantity of abacá cordage is manufactured, and the raw fiber is used without being twisted for all purposes where a tying material is required. Its most important local use, however, is for the manufacture of cloth. The native dress of both sexes in nearly all parts of the Archipelago is made from "sinamay," or abacá cloth. Looms are to be found in nearly every town in the Islands. The abacá fiber is frequently woven with either cotton or silk, in an almost innumerable variety of patterns. The fabrics made are of every degree of fineness, from delicate silk-like tissues to the coarse material used for fishing nets. With the introduction of fiber extracting and textile machinery there should be a largely increased demand for abacá as a textile fiber.

UTILIZATION OF WASTE PRODUCTS.

In the extraction of abacá by the methods now in use it is estimated that from 25 to

(approximately 625 acres), which is one-fourth of the amount of land that can be taken up by a corporation in the Philippines under the land law as enacted by the Congress of the United States. Planting 50 hectares a year, it would require five years to put this amount of land under cultivation. With respect to the cost of clearing and cultivating land, and also the yield, there will be considerable variation, depending upon the existing conditions where the plantation is located. This general estimate is prepared from figures obtained from both American and Filipino abacá planters in the Islands. It should be stated that practically all labor employed can be paid for in rice, cloth, and other commodities which will give a profit that should considerably more than pay for all incidental expenses that may occur. All accounts in the statement are in Philippine currency:

Estimate of the cost of establishing an abacá plantation.

FIRST YEAR.

Expendable:	
Cost of 250 hectares, at \$10 per hectare	\$2,500
Clearing 50 hectares, at \$20 per hectare	1,000
Purchase of 50,000 abacá stools, at \$30 per thousand	1,500

THIRD YEAR.

Expendable:	
Clearing 50 hectares	\$1,000
Planting 50 hectares	150
Cultivating 150 hectares	1,500
Fencing and roads	200
Overseer	1,800
Interest on investment	1,648
Depreciation	240
Total	6,538
Income account:	
From 50 hectares, 50 per cent of full crop (full crop from 50 hectares, at 12 piculs per hectare, 600 piculs; one-half paid for cleaning, leaves 300 piculs, at \$22 per picul, \$6,600)	3,300
Debit balance	3,238

FOURTH YEAR.

Expendable:	
Clearing 50 hectares	\$1,000
Planting 50 hectares	150
Cultivating 150 hectares	1,500
Fencing and roads	200
Overseer	1,800
Interest on investment	1,971
Depreciation	240
Total	6,861



UNLOADING HEMP AT CEBU

30 per cent of the fiber is wasted. At each cleaning shed we find large piles of waste which are filled with fibrous material. Experiments which have been made indicate that this waste can be advantageously used for the manufacture of paper. In 1887 samples were delivered to Messrs. Gonzales' Sons, paper manufacturers, of Barcelona, Spain. Their report upon this material was as follows:

"Observations made in the course of manufacture permit us to state that abacá waste as a raw material for the manufacture of paper is not only utilizable, but surpasses esparto and hemp, and, in its treatment for conversion into paper, excels rags and other materials known in the industry."

There is an enormous quantity of this waste produced in the different abacá districts, and at the present time it has no other use than as a fertilizer. The abundance, cheapness, and good qualities of this material are such that its utilization is a subject well deserving of attention.

ESTIMATED COST AND REVENUES OF AN ABACA PLANTATION.

The following is an estimate of the cost of establishing an abacá plantation. The size of the plantation selected is 250 hectares

Planting 50 hectares, at \$3 per hectare	150
Cultivation of 50 hectares (first year), at \$15 per hectare	750
Fencing and roads	200
Six carabaos, at \$100 each	600
Buildings	400
Tools and implements	200
Overseer, at \$150 per month	1,800
Incidentals	300
Total	9,400

SECOND YEAR.

Expendable:	
Clearing 50 hectares	\$1,000
Purchase of 50,000 abacá stools	1,500
Planting 50 hectares	150
Cultivation of 50 hectares (first year)	750
Cultivation of 50 hectares (second year)	500
Fencing and roads	200
Overseer	1,800
Interest on investment	940
Depreciation on tools, buildings, and animals (20 per cent of cost)	240
Total	7,080

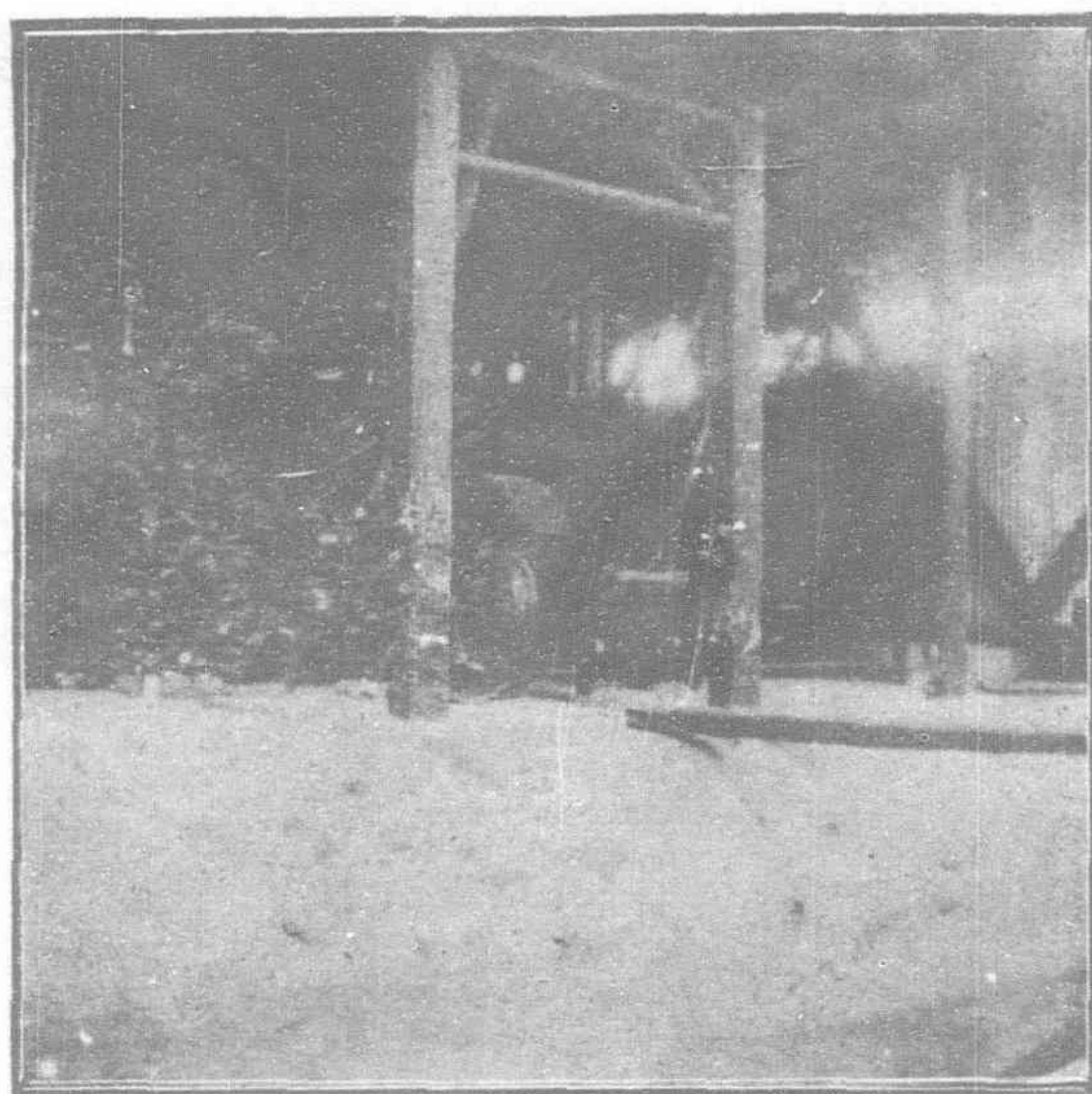
Income account:	
From 50 hectares, 50 per cent of full crop	\$3,300
From 50 hectares, a full crop	6,600
Total	9,900
Credit balance	3,039

FIFTH YEAR.

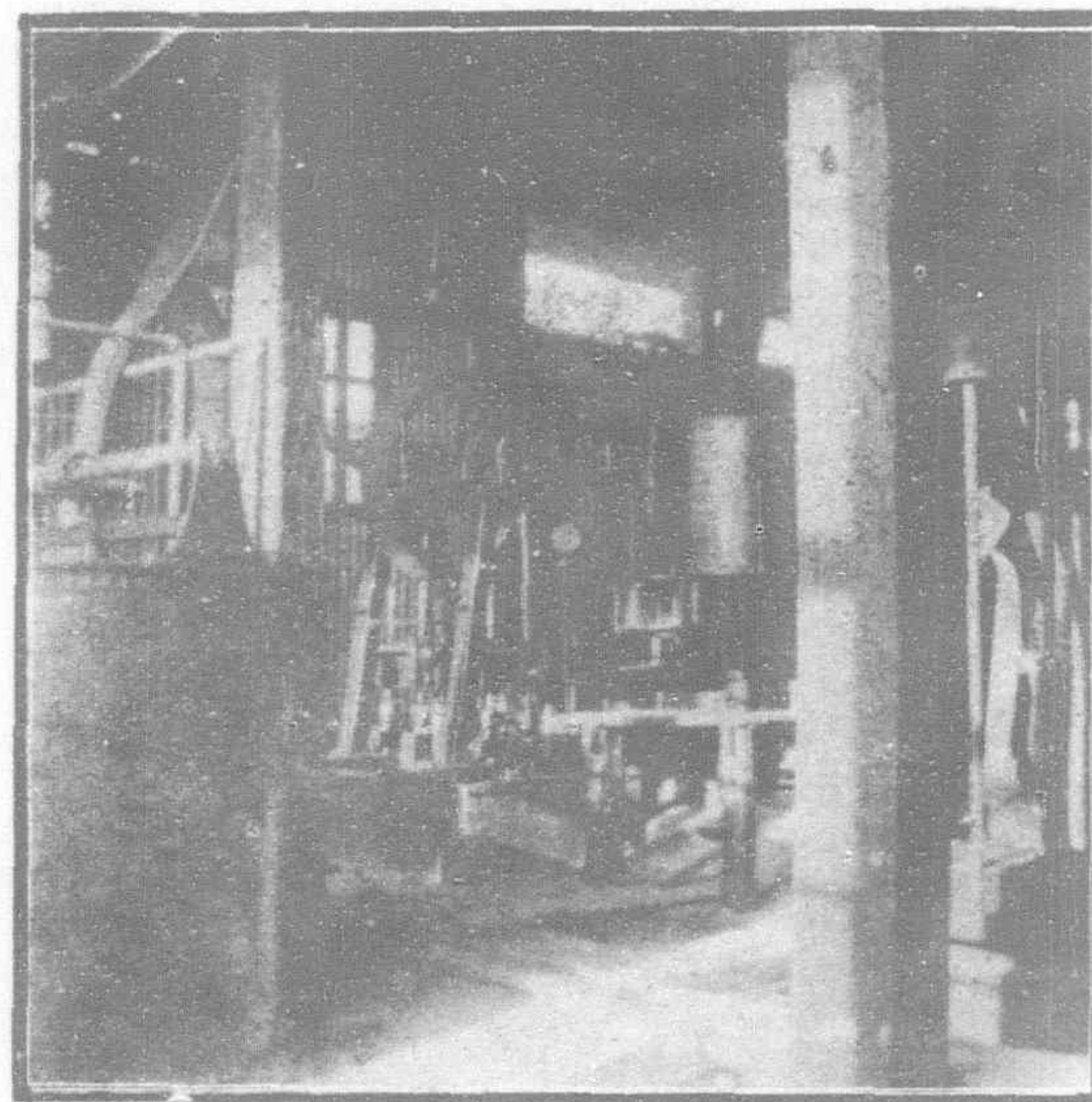
Expendable:	
Clearing 50 hectares	\$1,000
Planting 50 hectares	150
Cultivating 150 hectares	1,500
Fencing and roads	200
Overseer	1,800
Fixed interest on investment and depreciation charges	2,250
Total	6,900
Income account:	
From 50 hectares, 50 per cent of full crop	\$3,300
From 100 hectares, a full crop	13,200
Total	16,500
Credit balance	9,600

(Continued on page 36.)

PHILIPPINE COPRA PRODUCTION



FIBER EXTRACTING MACHINES.



OIL REFINING APPARATUS.

NEW COCOANUT OIL FACTORY AT TAYABAS.

(Concluded.)

Another man now takes up the nut and with a bolo strikes it a smart blow in the middle, dividing it into two almost equal parts. These parts are spread out and exposed to the sun for a few hours, or such time as may be necessary to cause the fleshy albumen to contract and shrink away from the hard outer shell, so that it may easily be detached with the fingers.

Weather permitting, the meat thus secured is sun dried for a day and then subjected to the heat of a slow fire for several hours. In some countries this drying is effected by hot-air driers and a very white and valuable product secured; but in the Philippines the universal practice is to spread out the copra upon what may be called a bamboo grill, over a smoky fire made of the shells and husks, just sufficient heat being maintained not to set fire to the bamboo. The halves, when dried, are broken by hand into still smaller irregular fragments and subjected to one or two days of sun bath. By this time the moisture has been so thoroughly expelled that the copra is now ready to be sacked or baled and stored away for shipment or use.

All modern cocoanut-oil mills are supplied with a decorticator armed with revolving discs that tear or cut through the husk longitudinally, freeing the nut from its outer covering and leaving the latter in the best possible condition for the subsequent extraction of its fiber. This decorticator is fed from a hopper and is made of a size and capacity to husk from 500 to 1,000 nuts per hour.

Rasping and grinding machinery of many patterns and makes, for reducing the meat to a pulp, is used in India, Ceylon, and China; and although far more expeditious, offer no improvements so far as concerns the condition to which the meats are reduced over the methods followed in the Philippines. Here the fleshy halves of the meat are held by the hand against a rapidly revolving, half spherical knife blade which scrapes and shaves the flesh down to a fine degree of comminution. The resulting mass is then macerated in a little water and placed in bags and subjected to pressure, and the milky juice which flows therefrom is collected in receivers placed below. This is now drawn off into boilers and cooked until the clear oil is concentrated upon the surface. The oil is then skimmed off and is ready for market.

The method outlined above is very wasteful. From general observation the processes in use are very inadequate, and it is estimated that not less than 10 per cent of the oil goes to

loss in the press cake. This is a loss that does not occur in establishments equipped with the best hydraulic presses. It is true that very heavy pressure carries through much coloring matter not withdrawn by the primitive native mill, and that the oil is consequently darker, and sooner undergoes decomposition; but modern mills are now supplied with filtration plants through which this objection is practically overcome.

The principles of the above process are daily reproduced in thousands of Filipino homes, where the hand rasping of the nut, the expression of the milky juice through coarse cloth, its subsequent boiling down in an open pan, and the final skimming off of the oil are in common practice. Notwithstanding the cheapness of labor, it is only by employing a mill well equipped with decorticator, rasping, hydraulic crushing, and steam-boiling machinery, and with facilities to convert the residue to feeding or other uses, that one may hopefully enter the field of oil manufacture in these Islands in competition with copra buyers.

COIR.

The fiber of the cocoanut husk, or coir, as it is commercially known, has never yet been utilized in this Archipelago, excepting occasionally for local consumption.

Second in value only to the copra, this product has been allowed to go to waste. The rejected husks are thrown together in immense heaps, which are finally burned and the ashes, exceedingly rich in potash and phosphoric acid, are left to blow away.

As the commercial value of the fiber is greater than the manurial value of the salts therein, it is economy to utilize the fiber and purchase potash and phosphoric acid when needed to enrich the soil.

Highly improved and inexpensive power machinery for the complete and easy extraction of the fibers of the husk, either wet or dry, is now rapidly superseding the tedious hand process once in such general use.

The husk-crushing mill breaks, crushes, and flattens out the husks by means of powerful, fluted metal rollers and, in the fiber extractor the broken husks are fed over a revolving drum set with teeth especially devised for tearing out the fiber from the entire mass. Finally, it is fed into one of the many forms of "wil- lowing" machines, which reduces the mass to clean fiber, which is now ready for grading, baling, and shipment. The residual dust and waste from this operation may be used as an absorbent for liquid manures, and ultimately

returned to the plantation. The yield of fiber varies from 12 to 25 quintals of coir and 4 to 7 quintals of brush fiber per 10,000 average husks. In the Philippines the nuts yield a large amount of fiber and a relatively small percentage of chaff and dust. With improved machinery and careful handling, 18 quintals of spinning coir and 5 quintals of bristle fiber from every 10,000 husks is a fair estimate of the product.

As the cost of manufacture is generally rated at one half the selling price, and as we must add a further charge of 20 per cent to cover freight and commission, we have resulting from the sale of the 23 quintals, or 2,300 kilos, at £16 per English ton, a balance of £11 11s. per hectare.

But there are other considerations which should not be overlooked. The husks of 10,000 cocoanuts will withdraw from the land 61.5 kilos of potash and 3 kilos of phosphoric acid, and the restoration of the full amount is called for to compensate for the growing wants of the tree, in addition to that withdrawn by the crop. The necessary fertilizers are worth, approximately, 5½d. per kilo, making a further reduction of £1 8s. and leaving as a net profit £10 3s. or, reduced to American money, nearly \$50, gold, per hectare.

The machines above referred to will cost \$800, gold, and \$1,200 additional will purchase and house the power necessary to operate them. Such a plant will work up 1,000 nuts a day, and handle in a year the output of a grove of 30 hectares. With the addition of two or more fiber extractors the capacity of the plant may be doubled without material expense, and it should rather more than pay its entire cost in one year.

TUBA.

Tuba is the fresh or mildly fermented sap drawn from the inflorescence of the cocoanut.

There are no figures or data of any kind available as a basis for an estimate as to the importance of this product, but its extent may be inferred from the fact that the outlying groves about Cebu, Iloilo, and the larger Visayan towns are practically devoted to the production of tuba, and not to the manufacture of copra.

Tuba is collected from the unexpanded blossoms as soon as they have fairly pushed through the subtending bracts. To prevent any lateral expansion, the flowers are tied with strips of the green leaf blade and then, with a sharp knife, an inch or two of the extreme tip is removed. The whole flower

cluster is now gently pulled forward until it arches downward. In a day or two the sap begins to drip and is then caught in a short joint of bamboo, properly secured for the purpose.

As a healthy tree develops at least one or more flowering racemes every month, and the flow of sap extends frequently over a period of two or more months, it is not uncommon to see a number of tubes in use upon one tree.

The workman usually visits the tree twice daily to collect the liquor drawn during the preceding twelve hours in the larger tube, which he carries upon his back. He slices daily a thin shaving from the tip of the flower, in order that the wound may be kept open and bleeding. This process is kept up until nearly all of the flower cluster has been cut away, or until the sap ceases to flow.

More than a liter a day is sometimes drawn from one tree, and 5 hectoliters is considered a fair annual average from a good bearing tree.

In its fresh state tuba has a sweetish, slightly astringent taste; but, as the vessels in which it is collected are rarely cleaned, they become traps for many varieties of insects, etc., and it is, therefore, not a very acceptable beverage to a delicate stomach. When purified by a mild fermentation it is far more palatable.

A secondary fermentation of tuba results in vinegar, and on this account, chiefly, so much space has been devoted to this feature of the industry. The vinegar so produced is of good strength and color, of the highest keeping qualities, and of unrivaled flavor. Its excellence is so pronounced that upon its inherent merits it would readily find sale in the world's markets; and although the local demand for the tuba now exceeds the production, its conversion into vinegar will probably prove the more profitable industry in the future.

Spirits are distilled and in some places sugar is still made from the flower sap; and, while the importance of these great staples may not be overlooked, their commercial value as products of this tree are relatively insignificant.

CULTIVATION.

SELECTION OF LOCATION.

In the selection of a site for a cocoanut grove it is best to select land near the seashore and not extending inland more than 2 or 3 miles. Within this narrow zone there is commonly a deposit of rich, permeable, well-drained alluvium offering soil conditions of far greater importance to successful tree growth than the mere exposure to marine influences. The success that has followed cocoanut growing in Cochin China, remote

from the seaboard, in Annam and up the Ganges basin one hundred or more miles from the coast, and in our own interior Province of Laguna, definitely proves that immediate contiguity to the sea is not essential to success.

That the cocoanut will grow and thrive upon the immediate seashore, in common with other plants, is simply an indication of its adaptability to environment. That it is at a positive disadvantage as a shore plant may be determined conclusively by anyone who will examine the root system of a seashore-grown tree upturned by a wash or tidal wave, and one uprooted from any cause, farther inland. It will be seen that the root system of the maritime plant is immensely larger than the other, and that a corresponding amount of energy has been expended in the search through much inert material to forage for the necessary plant food which the more favored inland species has found concentrated within a smaller zone.

The planting *must* be made in a thoroughly permeable soil.

The thick, fleshy roots of the newly upturned palm are loaded with water, and tell us that an inexhaustible store of this fluid is an indispensable element of success. If further evidence of this were required, the testimony of drooping leaves and of crops shrunk from one-half to two-thirds, throughout the cocoanut districts and upon our own orchard in Mindanao, as the result of drought, confirm it and bespeak the necessity of copious water at all times.

The living tree upon the sea sands further emphasizes this necessity; for, while its roots are lapped by the tides, it never flags or wilts, and from this we may gather the added value of a site which can be irrigated. The careful observer will note that along miles of sea beach, among hundreds of trees whose roots are either in actual contact with the incoming waves, or subjected to the subterranean influence of the sea, there will never be so much as one tree growing in any beach basin which collects and holds tidal water for even a brief time; and that, notwithstanding the large number of nuts that must have found lodgment and favorable germinating influence in such places, none succeed in growing. From this we may derive the assurance that the desired water must be in motion and that land near stagnant water, or marsh land, is unsuitable to the plant.

It may frequently be observed that trees will be found growing fairly thriftily upon mounds or hummocks, in places invaded by flood or other waters which, by reason of backing or damming up, have become stagnant. An examination of the roots of an overthrown tree in such a locality will show that all of those in the

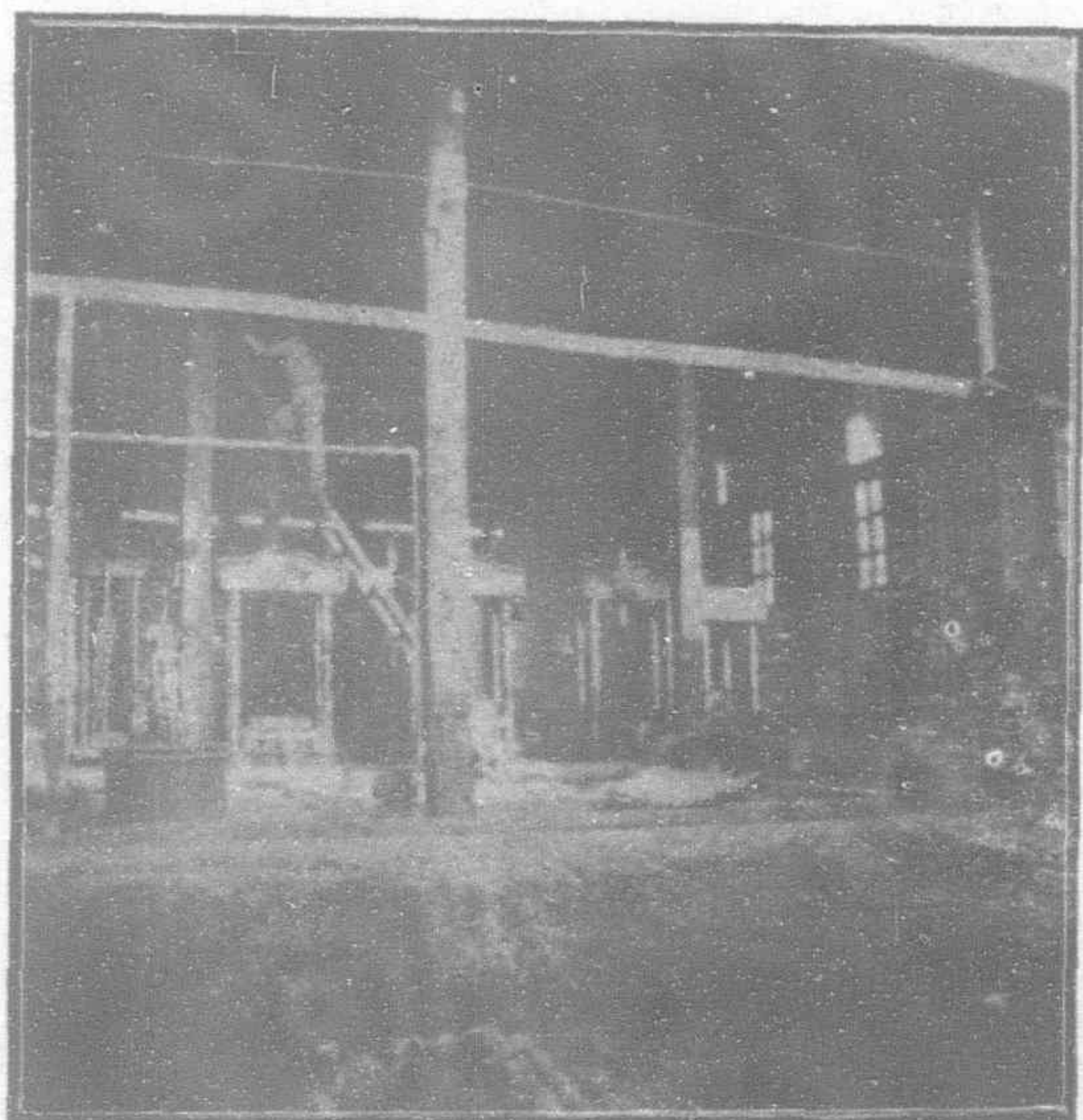
submerged zone have perished and rotted away, but that such is the vitality and recuperative energy of the tree that it has thrown out a new feeding system in the dryer soil of the mound immediately surrounding the stem, which has been sufficient to successfully carry on the functions of nutrition, but altogether ineffective to anchor the tree securely, or to prevent its prostration before the first heavy gale.

While this phase of the question will receive more attention when we come to consider the chemistry of suitable manures, it may be said that, although analysis of the cocoanut ash derived from beach-grown nuts shows a larger percentage of those salts that abound in sea water than those grown inland, yet the equal vigor, vitality, and fruitfulness of the latter simply confirm the plant's exceptional adaptability to environment and ability to take up and decompose, without detriment, the salts of sea or brackish waters. As a victim to the maritime idea, the writer in 1886 planted, far inland, several hundred nuts in beds especially devised to reproduce littoral conditions; shore gravel, sea sand, broken shells, and salt derived from sea water being used in preparing the seed beds. The starting growth was unexcelled. Then came a long period of yellowing decline and almost suspended animation, ultimately followed by a complete restoration to health and vigor. The early excellent growth was due to the fact that the first nourishment of the plant is entirely derived from the endosperm, and careful lifting of the young plants disclosed the fact that recovery from their moribund condition was, in every instance, coincident with the time that the roots first succeeded in working through the unpalatable mess about them into the outlying good, sweet soil.

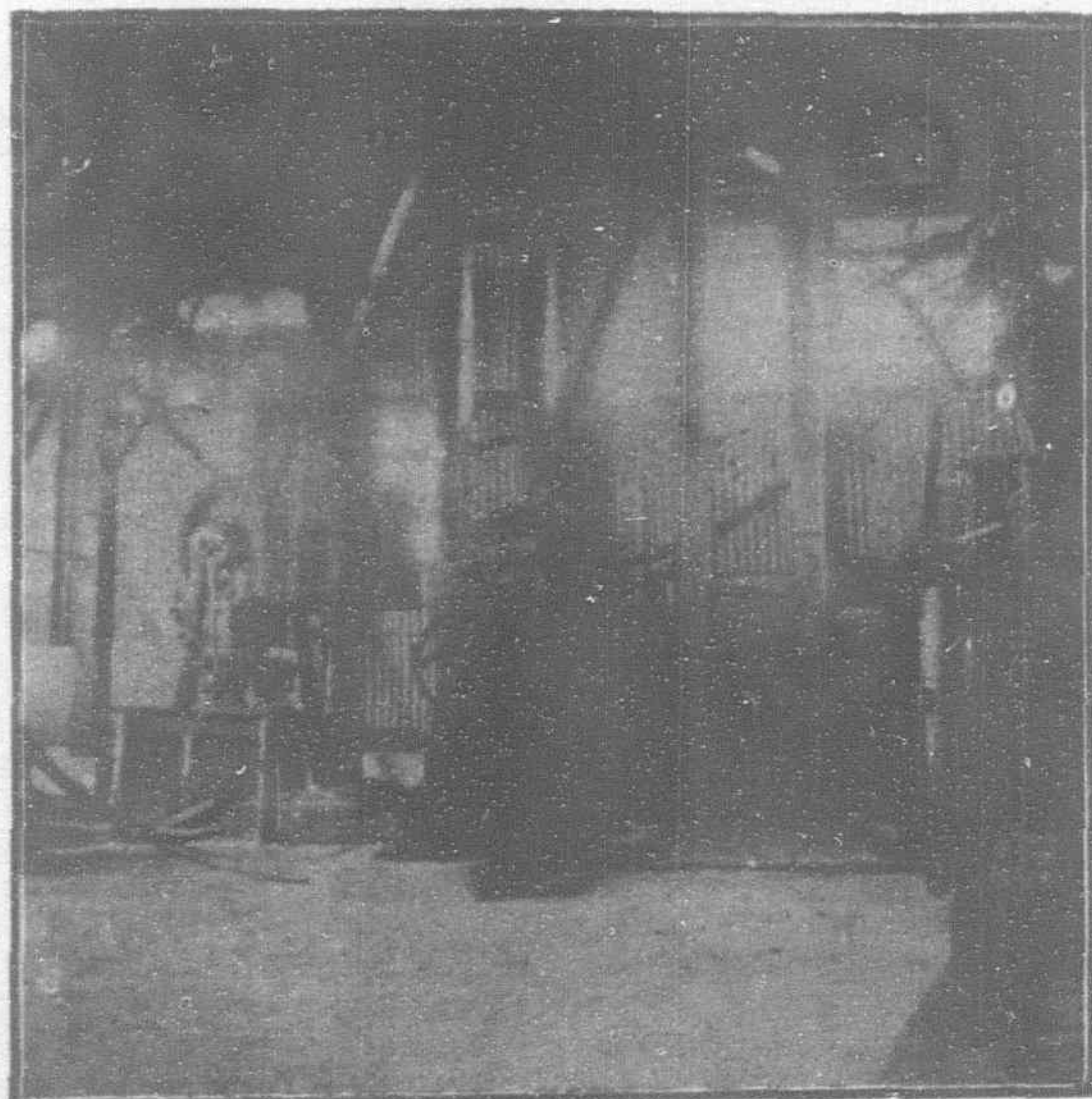
The exposure of the plantation is an important consideration, and a marine site should be selected in preference to one far inland, unless it be on an open, unprotected flat, exposed to the influence of every breeze or the fiercest gales that blow.

The structure of the cocoanut seems well fitted to endure winds of almost any force, and that a remarkably abundant and strong circulation of air is essential to its best development is well shown by comparing a tree subjected to it with the wretched, spindling specimen growing in a sheltered glen or ravine.

Strong confirmation of this may be found within the artificial environment of a plant conservatory, where it is feasible to reproduce, in the minute detail of soil, water, temperature, and humidity, every essential to its welfare except a good, strong breeze. As a consequence, the palm languishes, and it has long been deemed, on this account, one of the most rebellious subjects introduced into palm-house cultivation.



BATTERY OF HYDRAULIC PRESSES.



MACHINES FOR PREPARING THE COPRA.

NEW COCOANUT OIL FACTORY AT TAYABAS.

THE SOIL.

The soils for cocoanut growing are best selected by the process of exclusion. The study of the root development of the palm will prove to be an unerring guide to proper soil selection.

The roots of monocotyledons, to which great division this palm belongs, are devoid of the well-defined descending axis, which is possessed by most tree plants, and is often so strongly developed as to permit of rock cleavage and the withdrawal of food supplies from great depths.

The cocoanut has no such provision for its support. Its subterranean parts are simply a mat-like, expanse of thick, fleshy, worm-like growths, devoid of any feeders other than those provided at the extreme tips of the relatively few roots. These roots are fleshy (not fibrous) and can not thrive in any soil through which they may not grow freely in search of sustenance. It then becomes obvious that stiff, tenacious, or waxy soils, however rich, are wholly unsuitable. All very heavy lands, or those that break up into solid, impervious lumps, and lastly, any land underlain near the surface with bed rocks or impervious clays or conglomerates, are naturally excluded. All other soils, susceptible of proper drainage, may be considered appropriate to the growth of the palm. Spons (Encyclop.) advocates light, sandy soils. Cimmonds (Trop. Agri.) names nine different varieties suitable for this purpose, describing each at tedious length, and laying more or less emphasis upon a sandy mixture. These might all have been covered by the single word "permeable."

Ceylon and Indian nut growers as to the best method of tethering cattle upon cocoanut palms in pasture, so as to obtain the most benefit from their excreta.

With an intelligent study of the plant and its characteristics, it is believed that our native planter may put into practical use the knowledge that the veteran Indian planter has in fifty years failed to learn or utilize. He will learn that in time the entire superficies of his orchard will be required by the wide-spreading, surface-feeding roots of the trees, and that pasture crops of any kind, grown for any purpose other than soiling or for green manuring, are prejudicial to future success. He will know that the initial preparation of all of his orchard and its continuous maintenance in good cultivation are essential not only to the future welfare of his trees, but as a necessary means in connection with a judicious intermediate crop rotation.

Hence the preparatory requirements may be summed up as such preliminary soil breaking as would be required for a corn crop in similar lands, succeeded by such superficial plowings and cultivations as would be required to raise a cotton or any other of the so-called hoed crops.

SEED SELECTION.

Preliminary to planting, the very important question of seed selection calls for close scrutiny on the planter's part.

The small native planter is often familiar with the individual characteristics of his trees. Owners of small estates in Cuyos and about

many of very small and irregular size and shape, and it is obviously to the planter's interest to lend no assistance to the propagation and transmission of such traits. In view of what has been previously stated, it is almost superfluous earnestly to recommend planters to sow no seeds from young trees. The principle for this contention—that no seed should be selected except from trees of established, well-known fruiting habits—would seem to cover the ground effectually.

The best seed should be selected and picked when perfectly mature and lowered to the ground. The fall from a lofty tree not infrequently cracks the inner shell, without giving any external evidence of the injury. A seed so injured will never sprout and therefore is worthless for seed purposes.

Freshly-collected seed nuts contain in the husk more moisture than is required to effect germination, and, if planted in this condition, decay is apt to set in before germination occurs. To avoid this the natives tie them in pairs, sling them over bamboo poles, where they are exposed to the air but sheltered from the sun, and leave them until well sprouted. It is, however, more expeditious to pile the nuts up in small heaps of eight to ten nuts, in partial shade, where the surface nuts may be sprinkled occasionally to prevent complete drying out.

Germination is very erratic, sometimes occurring within a month and sometimes extending over four, five, or more months. When the young shoot or plumule has fairly thrust its way through the fibrous husk, it is a good practice to go over the heaps and segregate



COCOANUT GROVE

As a matter of fact, every grain of sand in excess of that required to secure a condition of perfect permeability is a positive disadvantage and must be paid for by a correspondingly larger area of cultivation and by future soil amendment. For the rest, the richer and deeper the soil, the less the expense of maintaining soil fertility.

The preparatory work of establishing an orchard is light, provided the location is not one demanding the opening of drainage canals, and on lands of good porosity it involves neither subsoiling nor a deeper plowing than to effectually cover the sod or any minor weed growths with which it may be covered.

It has long been the reprehensible practice of cocoanut growers to merely dig pits, manure them, set the plants therein, and permit the intervening lands (except immediately about the trees) to run to weeds or jungle.

In the Philippines the native planter has not yet progressed beyond the pit stage, nor do his subsequent cultural activities include more than the occasional "boloing" of such weeds as threaten to choke and exterminate the young plants.

Fortunately, it will not be long till the force and influence of example are sure to be felt by our own planters. The progressive German colonist of Kamerun, German East Africa, and the South Pacific Islands, as well as the French in Congo and Madagascar, are vigorously practicing conventional, modern orchard methods in the treatment of their cocoanut groves, and it is amazing to read of discussions between

Zamboanga have pointed out to me trees that have the constant fruiting habit confirmed, others that will fruit erratically, and others that flower yet rarely bear fruit. The fruitfulness of the first class is undoubtedly a result of accidental heredity, for the planter has in the past made no selection except by chance; nor is the characteristic in any way due to his cultural system, which consists in planting the nut and letting nature and heredity do the rest. One tree in Zamboanga, the owner assured me, had never produced less than 200 nuts annually for fully twenty-three years. Asked as to the bearing of all of his trees (of which he owned some three hundred), he stated that from the lot he averaged 20 nuts at a picking, five times a year, a total of 100 nuts; that the crop of these was very fluctuating, some years falling to 60 nuts, again running as high as 130. The especially prized tree did not vary appreciably. In very dry seasons the nuts shrunk somewhat in size and the copra in weight, but the yield of nuts never fell below 200, and only once had amounted to 220. He had raised a great number of seedlings, but it had never occurred to him to select for planting the nuts from that particular tree.

PLANTING.

We have pointed out the necessity of selecting seed trees of known good-bearing habits, and equal care should be exercised in selecting those the nuts of which are well formed and uniform. This precaution will suggest itself when one observes that some trees have the habit of producing a few very large nuts and

those that have sprouted, carefully placing them so that the growing tip be not deformed or distorted by the pressure of superincumbent nuts. When these sprouts are 30 to 50 cm. high, and a few roots have thrust through the husk, they are in the best possible condition for permanent planting.

First. The original preparation of the land should be good and the surface tilth at the time of planting irreproachable; i. e., free from weeds and so mellow that the soil can be closely and properly pressed around the roots by hand.

Second. The orchard should be securely protected from the invasion of cattle, etc. It is sometimes impossible to protect orchards against entry of these animals. If the success of these precautions can not be assured, then the nuts had better be grown in a closely protected nursery until about a year old, when the albumen of the seed will be completely assimilated and will therefore no longer attract vermin, and when the larger size of the plant will give it more protection from stray cattle.

In either case planting should be made concurrently with the opening of the rainy monsoon, during which season further field operations will not be required except when an intermittent, drier period indicates the advisability of running the cultivator.

The planting "pit" fetish, in such common use in India, has nothing to commend it. If stable manures of any kind are available, a good application at the time of planting will effect wonders in accelerating the growth of the young plants.

Where the necessary protection is assured, the young seedling planted out as above recommended should start at once, without check of any kind, into vigorous growth.

The nursery-grown subject receives an unavoidable setback. Its roots have been more or less mutilated, and, as we may not prune the top sufficiently to compensate for the root injury, it is generally several months before the equilibrium of top and root is fully restored. In most cases, by the end of the second year, it will have been far outstripped in the growing race by the former.

The history, habits, and characteristics of the cocoanut tree indicate that it needs a full and free exposure to sun, air, and wind; and, as it makes a tree, under such circumstances, of wide crown expansion, these indispensables can not be secured except by very wide planting.

Conventional recommendations cover all distances, from 5 to 8 meters, with quincunx (i. e., triangular plantings) urged when the 8-meter plan is adopted. But the writer has seen too many groves spaced at this distance in good soil, with interlacing leaves and badly spindled in the desperate struggle for light, air, and sun, ever to recommend the quincunx, or any system other than the square, at distances not less than 9 meters, and, in good soils, preferably 9.5 meters.

With these reservations, there is everything to commend the practice of shouldering the tree, as offering the safest, most expeditious and economical way of making it possible to climb and secure the harvest. It is, of course, understood that the cuts should be made sloping outward, so as not to collect moisture and invite decay, and no larger than is strictly necessary for the purpose.

MANURING.

The manuring problem must be met and solved by the best resources at our command. The writer has had pointed out hundreds of trees that, wholly guiltless of any direct application of manure, have borne excellent crops for many successive years; but he has also seen hundreds of others in their very prime, at thirty years, which once produced a hundred select nuts per year, now producing fluctuating and uncertain crops of fifteen to thirty inferior fruits.

Time and again the native growers have told me of the large and uniformly continuous crops of nuts from the trees immediately overshadowing their dwellings, and, although some have attributed this to a sentimental appreciation and gratitude on the part of the palm at being made one of the family of the owner, a few were sensible enough to realize that it came of the opportunity that those particular trees had

cretion, owing to the danger of impoverishing the supply of necessary lime in the soil.

Finally, so injurious is the direct application of salt to the roots of most plants that the invariable custom of trained planters (who, for the sake of the potash contained, are compelled to use crude Stassfurt mineral manures, which contain large quantities of common salt) is to apply it a very considerable time before the crop is planted, in order that this deleterious agent should be well leached and washed away from the immediate field of root activity.

NEW COCOANUT OIL FACTORY

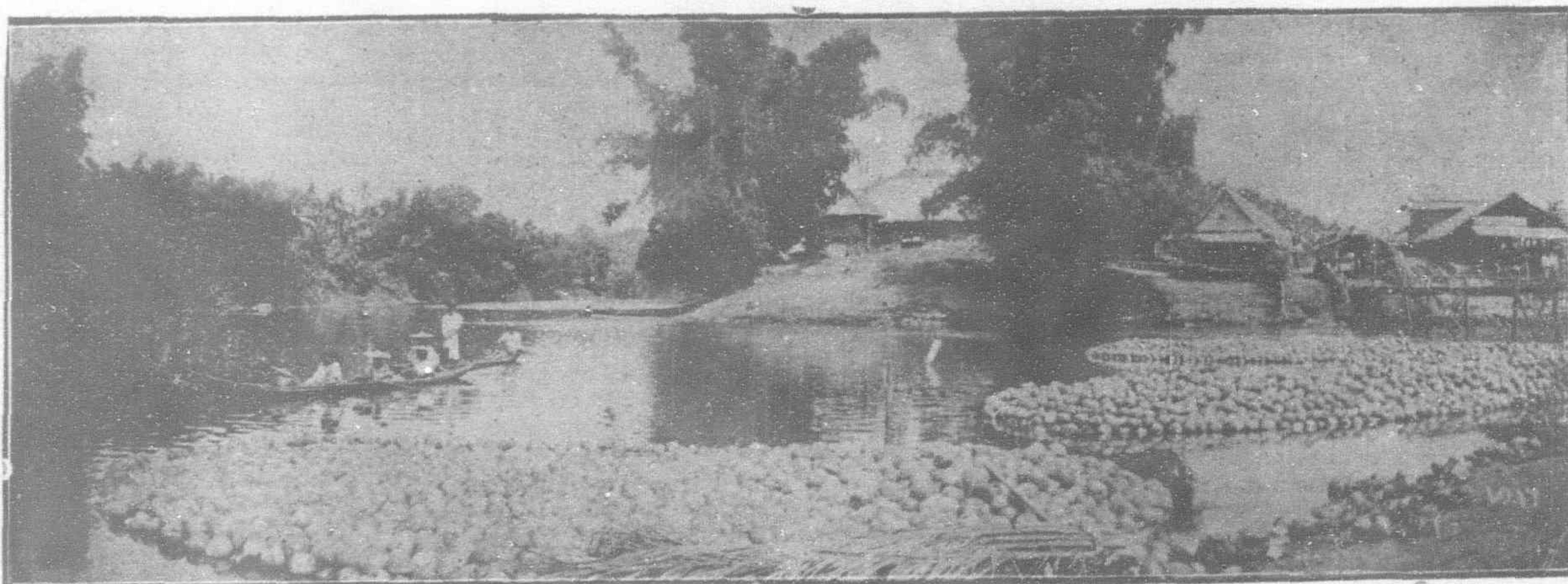
TAYABAS, P. I.

The limited copartnership, Arnalot Hermanos, Tayabas, Tay., was inaugurated in Manila on June 23rd, 1903, with a capital stock of P50,000, increased later to P100,000.

The managing partners are Señores Arnalot Hermanos, of Atimonan, Tay., the special partners being the well-known Manila business men, Señor Jesus A. de Sendagorta, Sr. José Verches y Sr. José M. a Rosado.

The erection of the plant and the installation of the hydraulic machinery were carried out under Doctor Arnalot's immediate supervision.

The motive power is drawn from two water courses in the same locality, at a point one mile



COCOANUT RAFT.

The former distance will allow for 123 and the latter 111 trees to the hectare. They should be lined out with the greatest regularity, so as to admit at all times of cross plowing and cultivation as desired.

From this time forward the treatment is one of *cultural* and *manurial* routine.

Annual plowings should not be dispensed with during the life of the plantation. These plowings may be relatively shallow, sufficient to cover under the green manures and crops that are made an indispensable condition to the continued profitable conduct of the industry. Nothing is to be gained by the removal of the earliest flowering spikes. Flowering is the congestion of sap at a special point, which, if the grower could control it, he would wish to direct, in the case of young plants, to the building up of leaf and wood. Cutting the inflorescence of the cocoanut results in profuse bleeding, and, unless this be checked by the use of a powerful stypic or otherwise, it is doubtful if the desired end would be accomplished. The earlier crops of nuts should all be taken with extension cutters or from ladders. No shoulders for climbing should be cut in any tree, the stem of which has not become dense, hard, and woody. Cut when the wood is the least bit succulent, they becoming inviting points of attacks for borers.

to get the manurial benefit of the household sewage and waste.

Yet, the lesson is still unlearned, and, after much diligent enquiry, I have yet to find a nut grower in the Philippines who at any time (except at planting) makes direct and systematic application of manure to his trees.

In India, Ceylon, the Penang Peninsula, and Cochin China, where the tree has been cultivated for generations, the most that was ever attempted until very recently was to throw a little manure in the hole where the tree was planted, and for all future time to depend on the inferior, grass-made droppings of a few cattle tethered among the trees, to compensate for the half million or more nuts that a hectare of fairly productive trees should yield during their normal bearing life.

Upon suitable cocoanut soils—i. e., those that are light and permeable—common salt is positively injurious. In support of this contention, I will state that salt in solution will break up and freely combine with lime, making equally soluble chlorids of lime, which, of course, freely leach out in such a soil and carry down to unavailable depths these salts, invaluable as necessary bases to render assimilable most plant foods; and that, on this account, commercial manures containing large amounts of salt, are always to be used with much dis-

tant from Tayabas. This power is utilized by means of a 40 H. P. Hercules-Progress turbine, and, when transformed into electric energy, conducted to the Tayabas plant.

The water privilege was granted by the Philippine Civil Commission, under Act No. 1262, to Sr. Y. Arnalot.

The oil-producing capacity of the factory has been calculated for the average yield of copra in the locality, which is computed at about from 6000 to 7000 kg. a day.

The offal or copra loaves will be used in the fattening of swine, and in the rearing of every kind of poultry. The oil is also intended for the production of soap.

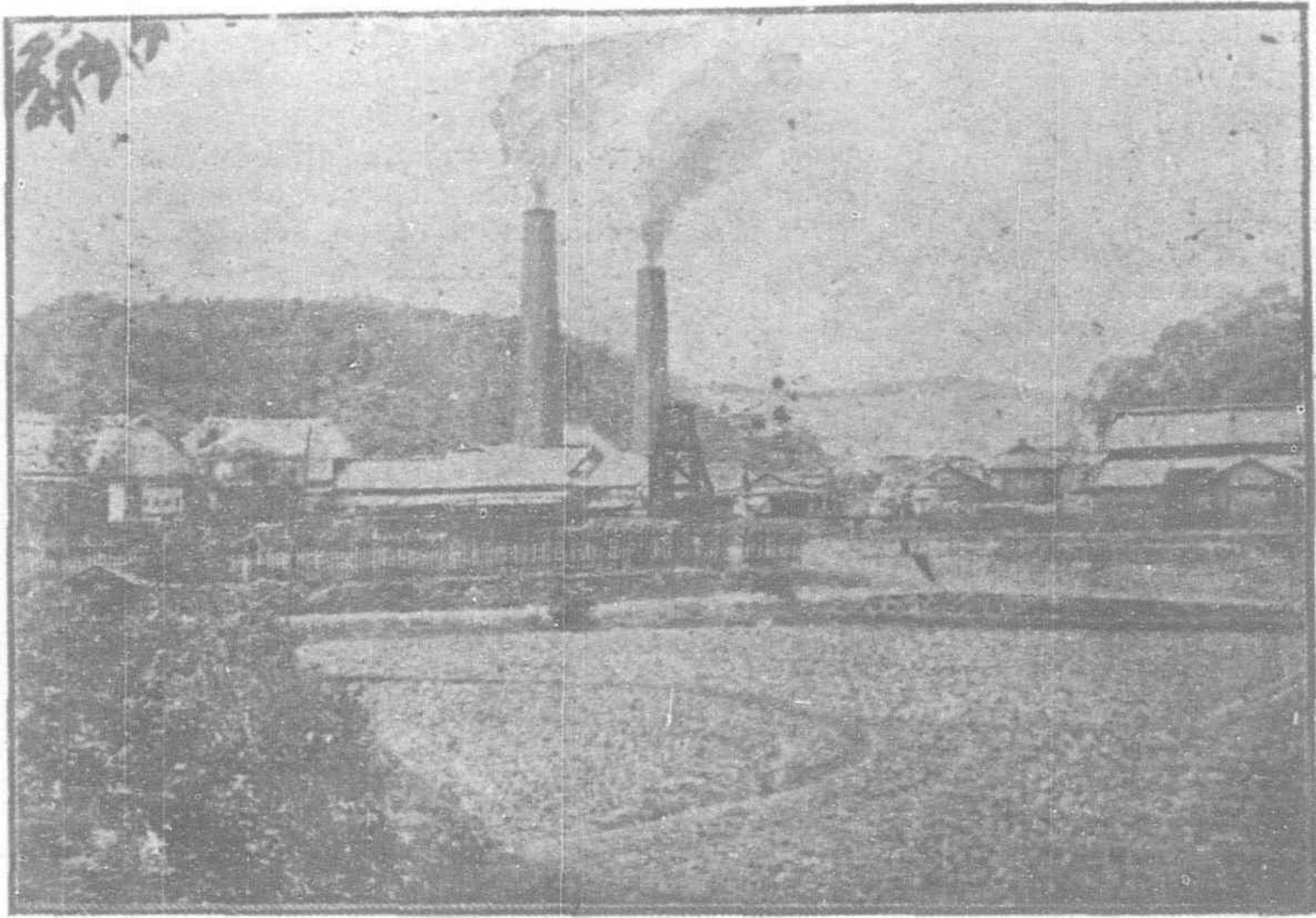
With a view to obtaining the maximum profit of this industry, further arrangements are being made with Messrs. Germann & Co., Limited, to secure the necessary machinery to draw from the cocoanut plant the vegetaline and other vegetable juices.

In addition to the oil-extracting industry, other machinery for the turning to advantage of the fibre with which the nut fruit is covered has been established.

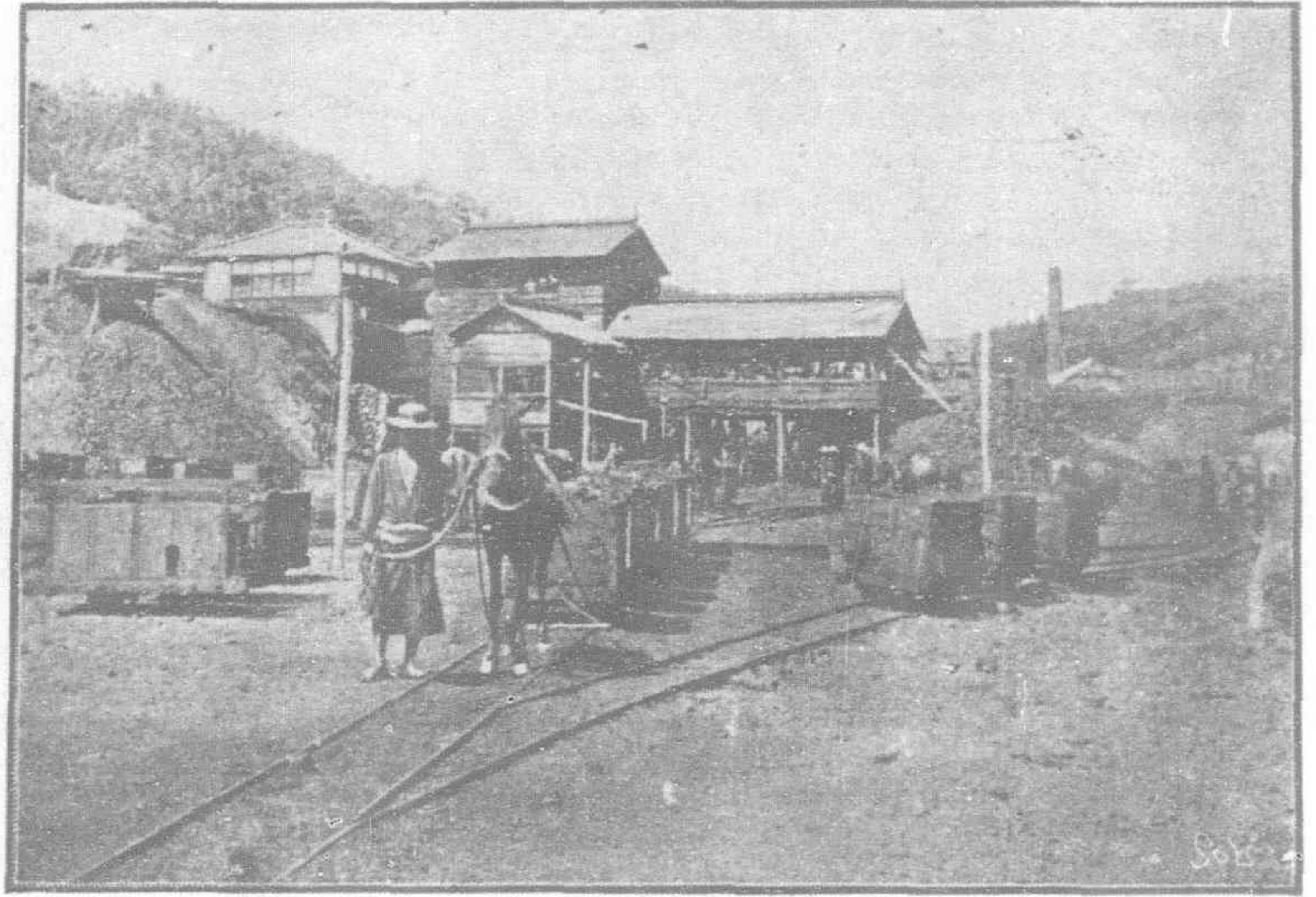
The work of the factory commenced this month, Sres. G. Urrutia & Co. being entrusted with the local sales, while Messrs. Germann & Co., Limited, of Manila, are the general export agents for all products of the factory.

KAIJIMA KOGYO GOMEI KAISHA

(KAIJIMA MINING COMPANY)



MANNAURA MINE, OHNOURA COLLIERY



SCREENING HOUSE, SUGAMUTA MINE

The Company possesses nine coal mining concessions in the prefectures of Fukuoka and Saga, Kyushu, representing an aggregate area of 12,833,809 *tsubo* (about 10,481 acres), of which three—Ohnoura, Ohtsuji, and Yunokibaru—are being worked, while preparations are in progress to open up the rest of the mines. The outputs from these three coal mines average from 164 to 1,205 tons a day, making a total daily output of 2,061 tons.

The Company enjoys excellent facilities in the transportation of coal. It requires but two or three hours to convey coal from the collieries to the ports of shipment. The products from the Ohnoura and Ohtsuji mines are shipped from Moji or Wakamatsu, and that from the Yunokibaru from Karatsu.

The sale of the Company's coal is entrusted to the Mitsui Bussan Kaisha (Mitsui & Co.), a well-known establishment having its branches and agencies throughout the world.

The present-day success of this firm is entirely due to the indefatigable efforts on the part of its partners, Mr. Tasuke Kaijima and his two brothers Rokutaro and Kazo, who, when the coal mining was yet in a state of infancy in this country, conjointly devoted themselves to the development of the mining industry, shared labor with miners, and left no stone unturned to equip

their mines with efficient machinery. Their well-directed efforts have been deservedly rewarded. The Company now holds a leading position among the coal-mining concerns in Kyushu, the output from its collieries making up one-sixth of the total coal production of the Chiku-Ho, that is, Buzen and Chikuzen provinces. The coal is largely exported to Hongkong, Shanghai, and other Asiatic ports and enjoys popularity among its consumers. The president of the Company has been decorated on account of his meritorious service rendered to the State contributing to the enhancement of the national wealth. The Company was awarded a diplôme of gold medal at the Paris Exposition of 1900 for efficiency in the management and equipment of its mines.

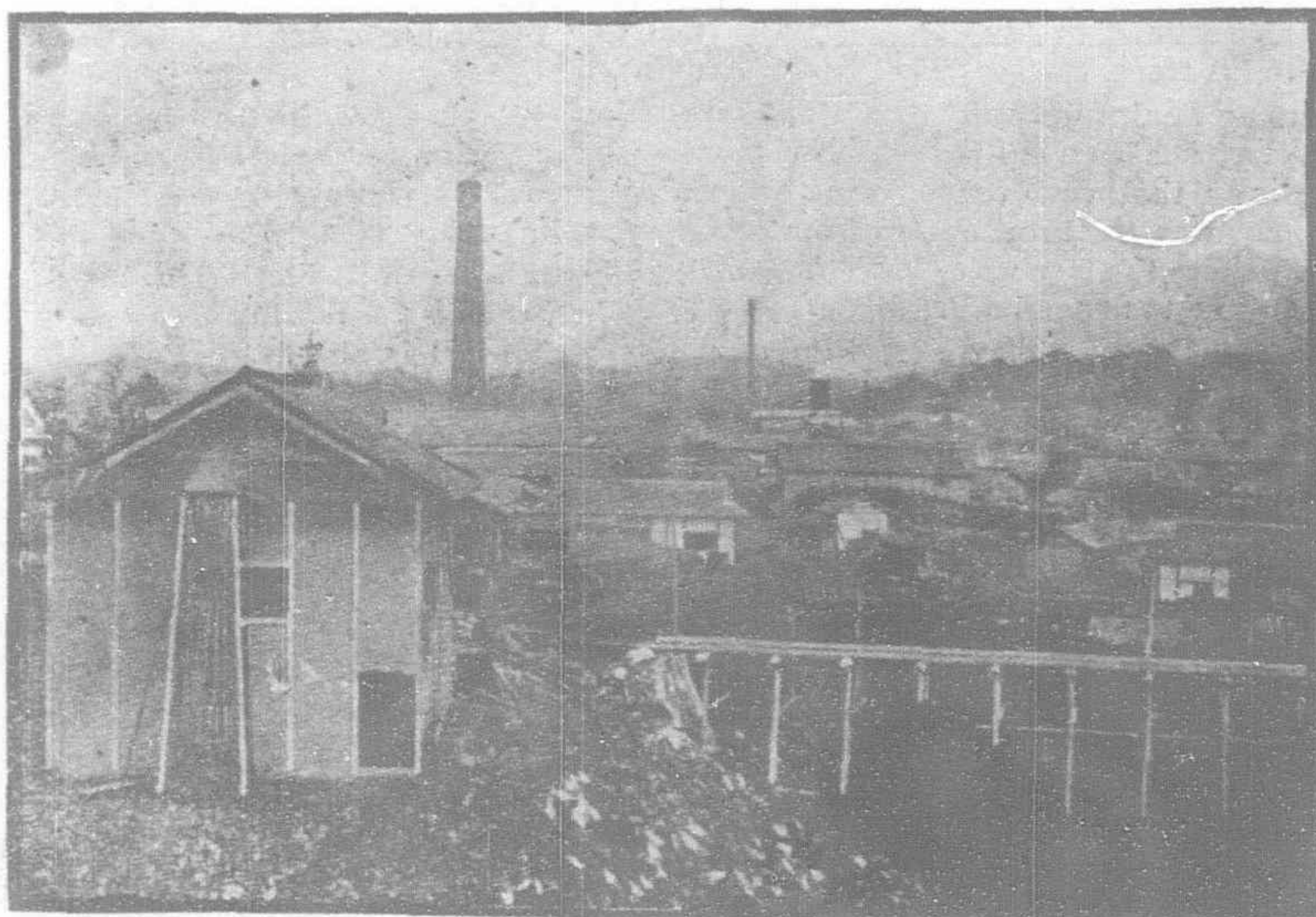
The following will give further particulars as to the conditions of each of the Company's working collieries.

OHNOURA COLLIERY.

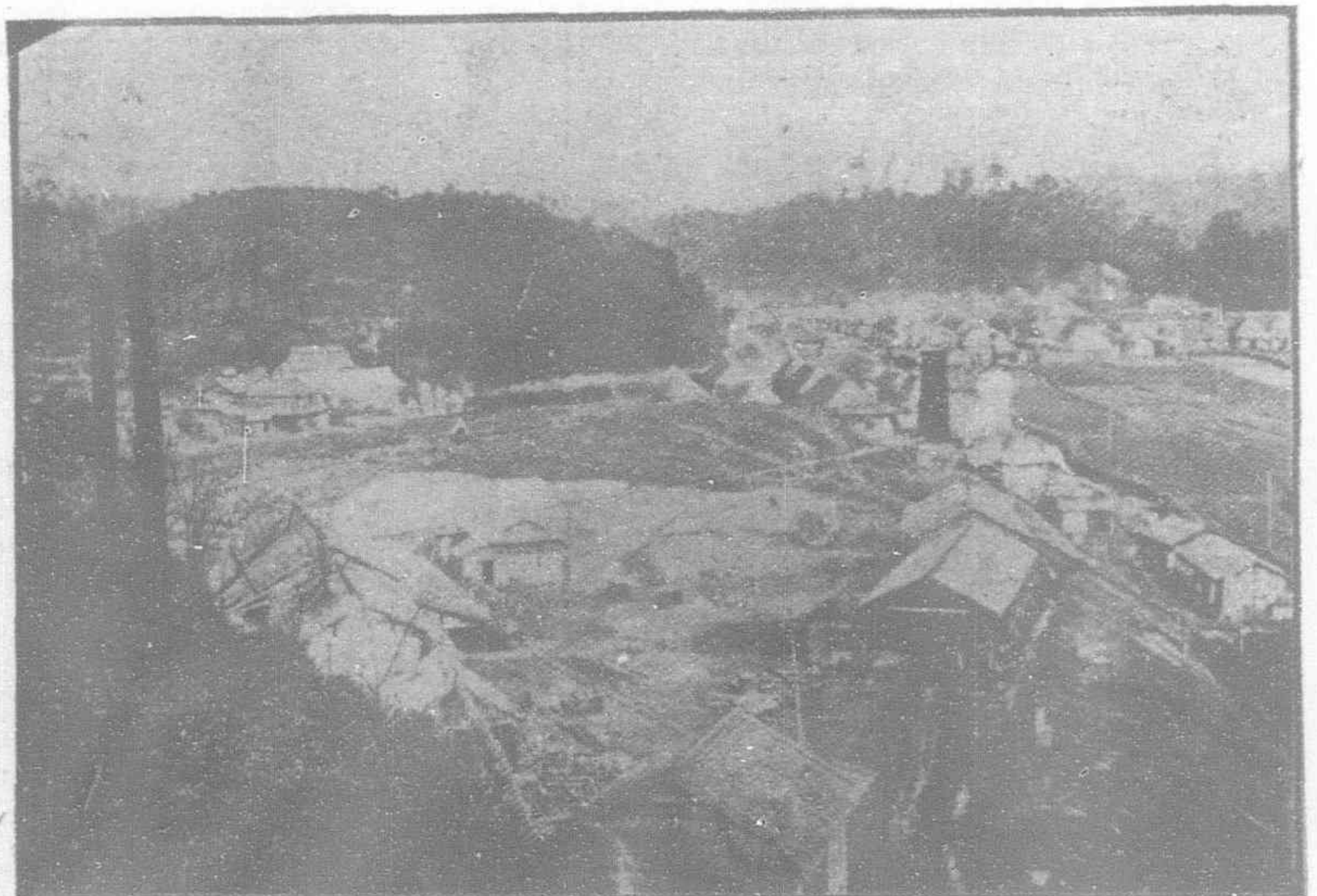
Location.—This colliery comprises three mines of Ohnoura, Sugamuta, Kirino, and Mannoura. The mining concession covers an area of 2,956,401 *tsubo* (about 2414 acres). The Kyushu railway passes along the northern extremity of this concession, thus affording facilities for the transporting of coal away from

the colliery. The head office of the Company is in Naokata, a flourishing station town on the Kyushu railway. A system of telephone, extending over 7 miles, is constructed by the Company to connect the head office with the mines.

History.—The date of the discovery of these mines is not known. It was in 1883 that Mr. Tasuke Kaijima, president of the Company, purchased a small mining lease at Ohnoura. This was the nucleus of the Company's present mining enterprise. In course of time the concession was gradually extended in area, and concessions were also obtained at Sugamuta and Kirino. The owners experienced a great difficulty in sinking shafts and making other coal-mining operations, no efficient machinery and skillful mining engineers being available at that time. Through diligence and tact of the owners, however, the business had attained a fair footing, when, what with trade depression and flooding of the mine workings, a serious blow was dealt on the owners and the work was well-nigh abandoned. They, however, managed to tide over these hard times, and the former prosperity was gradually restored. The recent development in the sea-borne trade of the Empire has effected a proportionate expansion in the coal trade in general, and, under such



NO. 2 MINE, OHTSUJI COLLIERY



SHIRAIWA NO. 1 MINE, OHTSUJI COLLIERY

favorable circumstances, the Company has grown up to the present state. In 1899 a mining railway was constructed between the Kirino mine and Katsuno on the Kyushu railway, a distance of more than three miles, and a further facility in the conveyance of coal has thus been secured. This railway was subsequently transferred to the Kyushu Railway Company.

Output.—Below is given a table showing the output from the three mines already mentioned, in each of the years given:—

Year.	Tons.
1897	209,955
1898	239,091
1899	214,888
1900	238,312
1901	377,450
1902	433,825

Total	1,714,521
Monthly average	36,152
Daily average	1,205

N. B.—The mining operations at the new Ohnoura pit commenced in 1901.

Coal Seams and Quality of Coal.—The coal-bearing strata belong to the tertiary system, and there are seven seams, of which three-feet and five-feet seams are of excellent quality and are now being worked. The nature of the coals can be judged by the following analysis made by the Imperial Steel Works:—

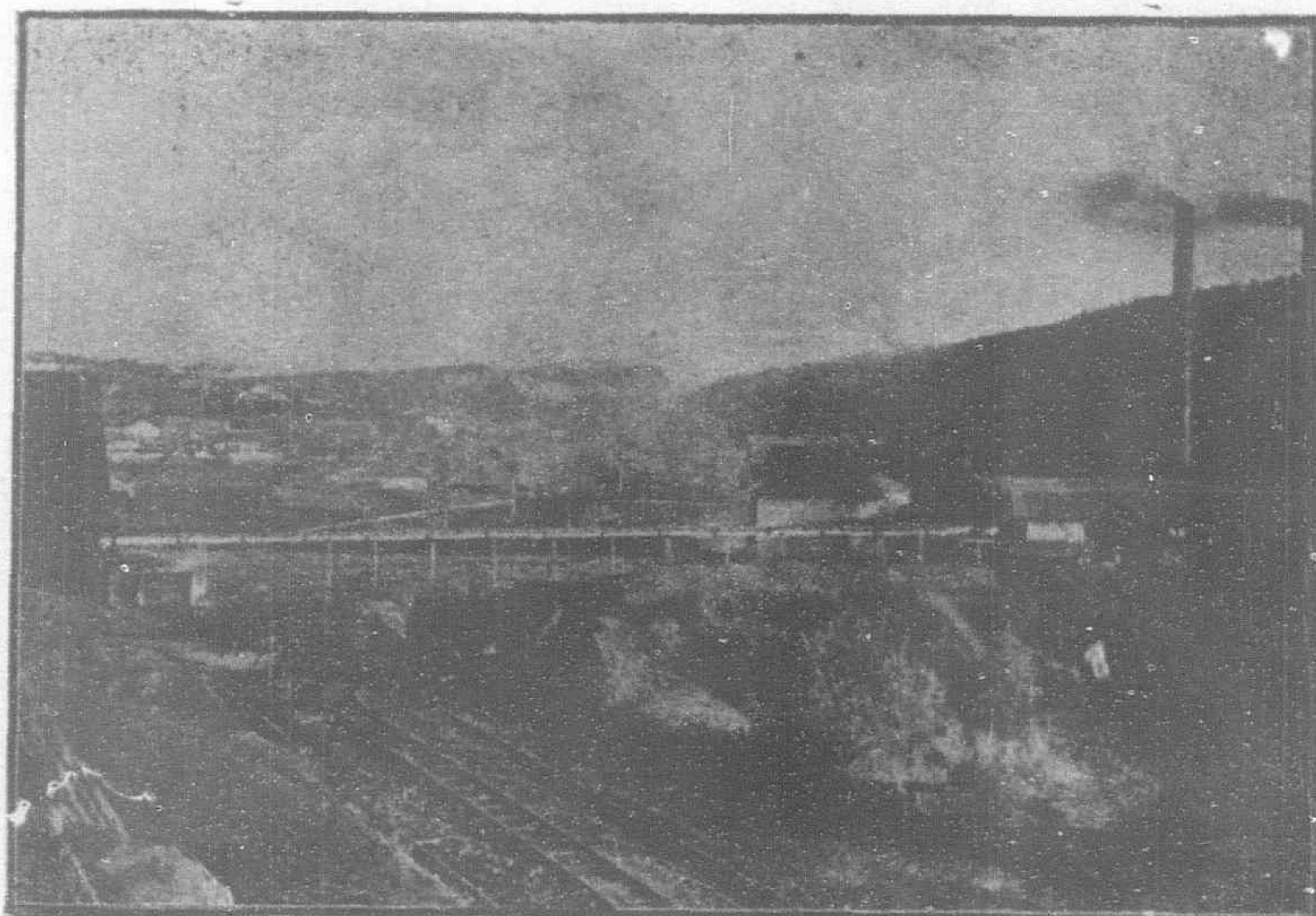
Name	Water	Volatile	Coke	Ash	Sul-	Heating
		Matter			phur	Value
						calories
Ohnoura ... 3-feet	1.7	40.1	49.8	8.4	0.3	7,040
Ohnoura ... 5-feet	1.0	44.9	43.5	10.6	3.2	7,590

Method of Working, etc.—The coal is won by the pillar and room system and coal cutting is carried on mostly by manual labor, although dynamite is applied when required. The proportion of lump and dust coal is 70 per cent of the former and 30 per cent of the latter. Timbering consists mostly of pine logs, but near the pit brick supports are in use. For drainage purposes 63 "special" pumps are installed at the pits, and altogether 125 cubic feet of water per minute is pumped out of the mines. Ventilation is effected naturally except in the case of the Kirino mine, where a Champion ventilator, capable of discharging 75,000 cubic feet of air per minute, is worked by steam. The mines are lighted by Davey and Clanny safety lamps. At the Sugamuta mine, electric light is used on the surface. There are upwards of 6,800 mine workers employed at the mines.

Mines.—The following table gives the depth or extent of the mines:—

Name of mine.	Extent feet.	Depth feet.
Ohnoura ... (Drift Mine)	1,188	
Ohnoura ... (Shaft Mine)		500 (now sinking)
Sugamuta ... (No. 1 Drift Mine)	600	
Sugamuta ... (No. 2 Drift Mine)	2,520	
Sugamuta ... (No. 1 Shaft Mine)		165
Sugamuta ... (No. 2 Shaft Mine)		550 (now sinking)
Kirino ... (Drift Mine)	2,280	
Kirino ... (Shaft Mine)		68
Mannoura ... (Drift Mine)	2,208	
Mannoura ... (Shaft Mine)	203	

Underground and Surface Conveyance.—Truck railway is constructed on the chief mine roads. To hoist cars running on rails, six winding engines are worked by steam. Surface transport varies according to the mines. In the case of the Sugamuta mine, the coal from the different pits is conveyed to the screening house at the mouth of the shaft by endless rope tramway. After screening is effected, the coal is transported to the Company's coal sheds at Katsuno, and there it



SUGAMUTA MINE, OHNOURA COLLIERY

is loaded in railway cars and sent to Wakamatsu (18 miles) or Moji (20 miles). In the case of Ohnoura mine, the coal is transported to the screening plant at Kirino, and there loaded in railway cars to be sent to Wakamatsu or Moji. In the case of Kirino, the coal is directly put in railway cars after screening and conveyed to Wakamatsu and Moji, a distance of 20 and 31 miles respectively. In the case of Mannoura, the coal, after it is lifted out of the mines, is drawn by horses on rails as far as the Inunaki river, a distance of 7,200 feet, whence to Kirino (2,400 feet) by endless rope tramway. At Kirino the coal is transferred into railway cars and sent either to Wakamatsu or Moji.

OHTSUJI COLLIERY.

Location.—This colliery comprises five working mines; namely, Ohtsuji No. 1, No. 2, Shiraiwa No. 1, No. 2, and No. 3. These mines are situated in Onga district, Chikuzen province, and cover an aggregate area of 1,944,295 *tsubo* (about 1587 acres). The distance from this colliery to Naokata is about five miles.

History.—The nucleus of the present colliery first came into the possession of the Company in the year 1866. Since then remarkable improvements in various directions have been made and the mining area has also been considerably increased, by additions made by purchasing neighboring properties.

Output.—The output in each of the six years ending 1902 was as under:—

Year.	Tons.
1897	73,868

1898	206,660
1899	156,483
1900	155,609
1901	222,680
1902	249,108

Total	1,064,408
Monthly average	20,759
Daily average	692

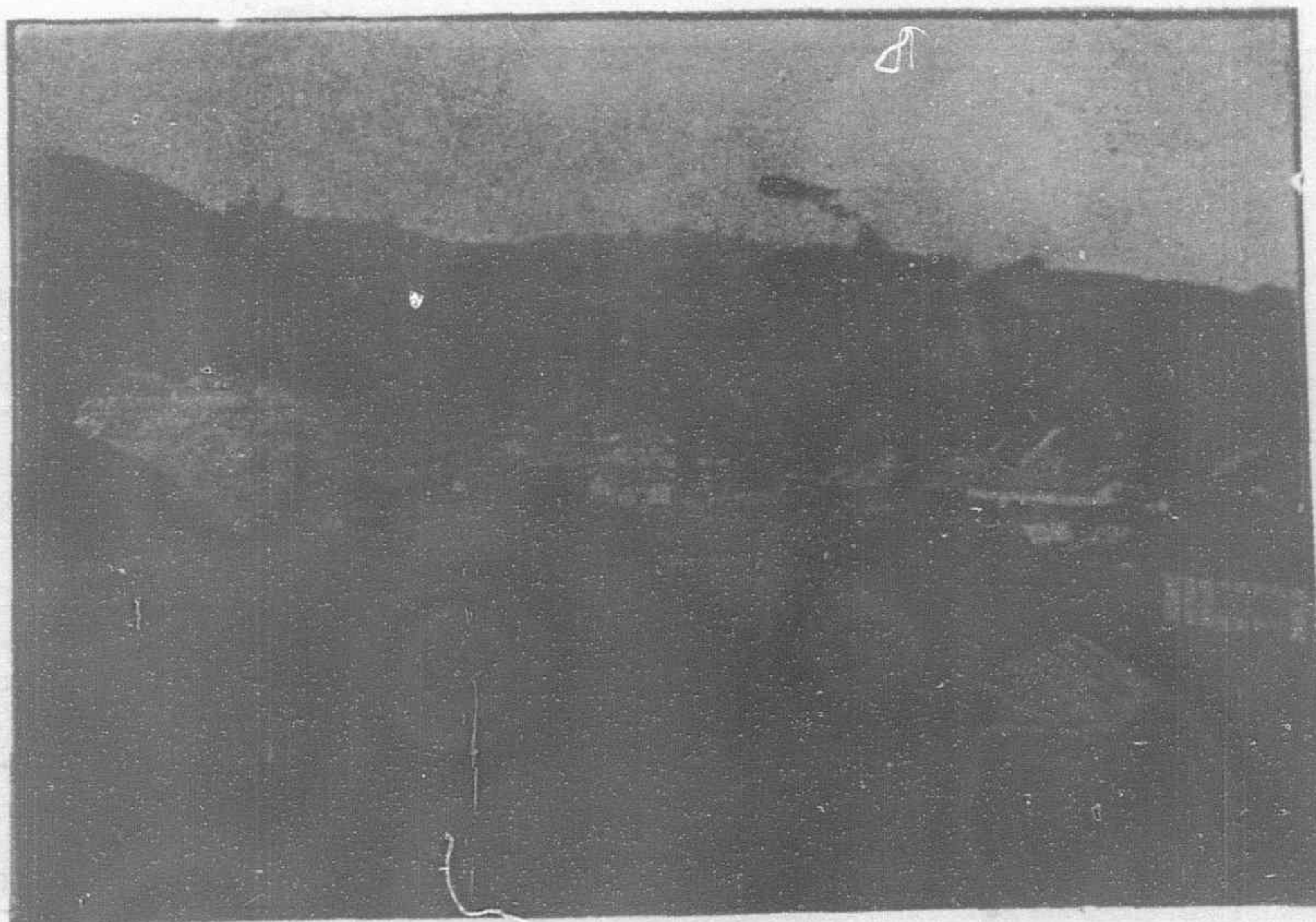
Coal Seams and Character of Coal.—The coal seams consist of five seams varying in thickness between 2 and 5 feet, of which four are now worked. Of these seams the Ohneda yields the best coal of all, its quality being as in the following analysis made by the Imperial Steel Works:—

Moisture	Volatile	Coke	Ash	Sul-	Heating
	Matter			phur	Value
					calories
4.2	43.7	48.5	3.6	2.6	7,700

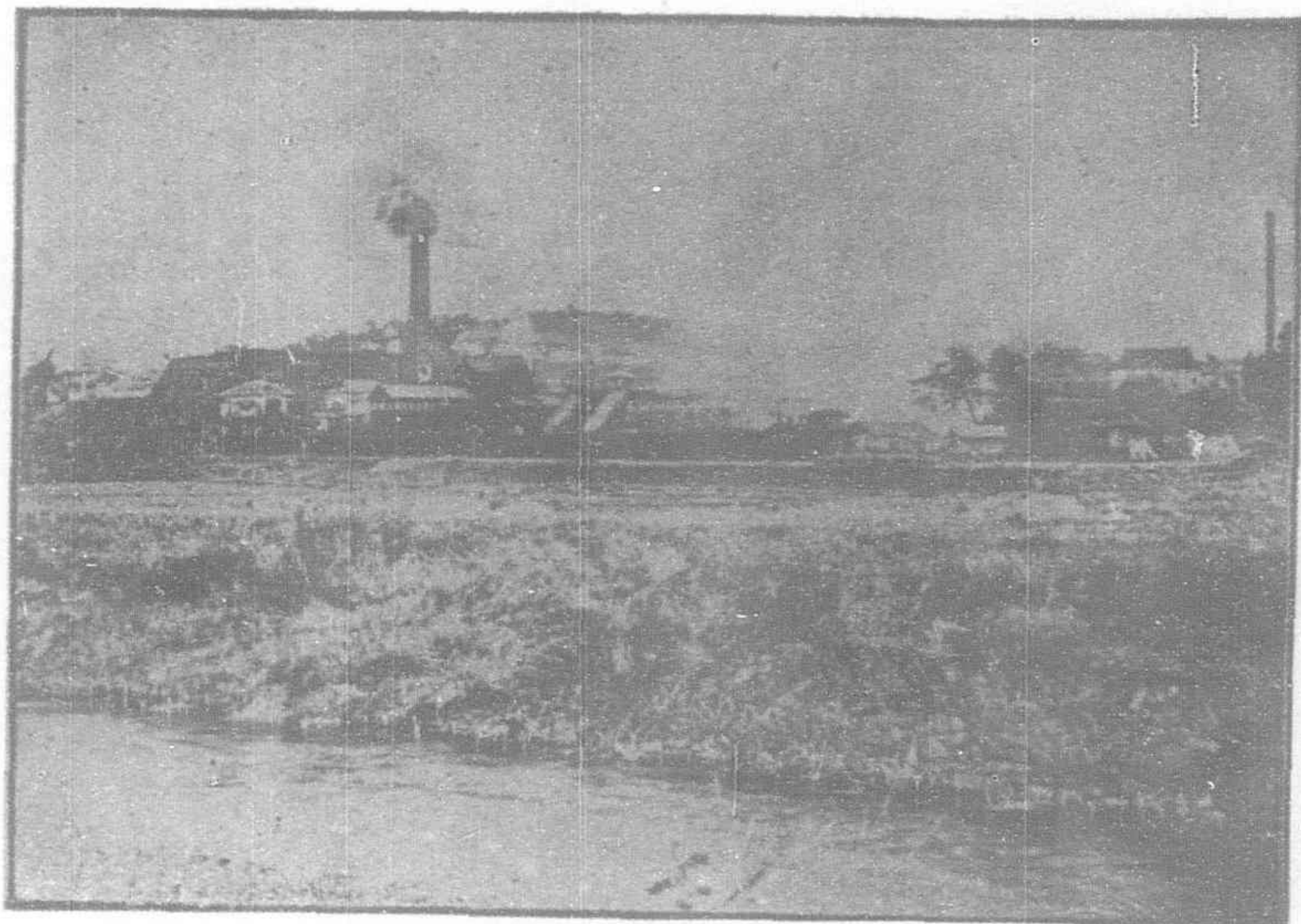
Method of Working, etc.—Either the pillar and room or the longwall system is adopted according to the conditions of the mines. For drainage purposes, there are altogether 27 "special" pumps in operation. Ventilation is naturally effected, the air entering from the shafts and going out from the drifts. At the Ohtsuji No. 2 mine, electric lamps are in use in the surface buildings.

Mines.—There are five drift mines and six shaft mines, the former being from 1,200 to 3,900 feet long and the latter from 70 to 280, feet deep.

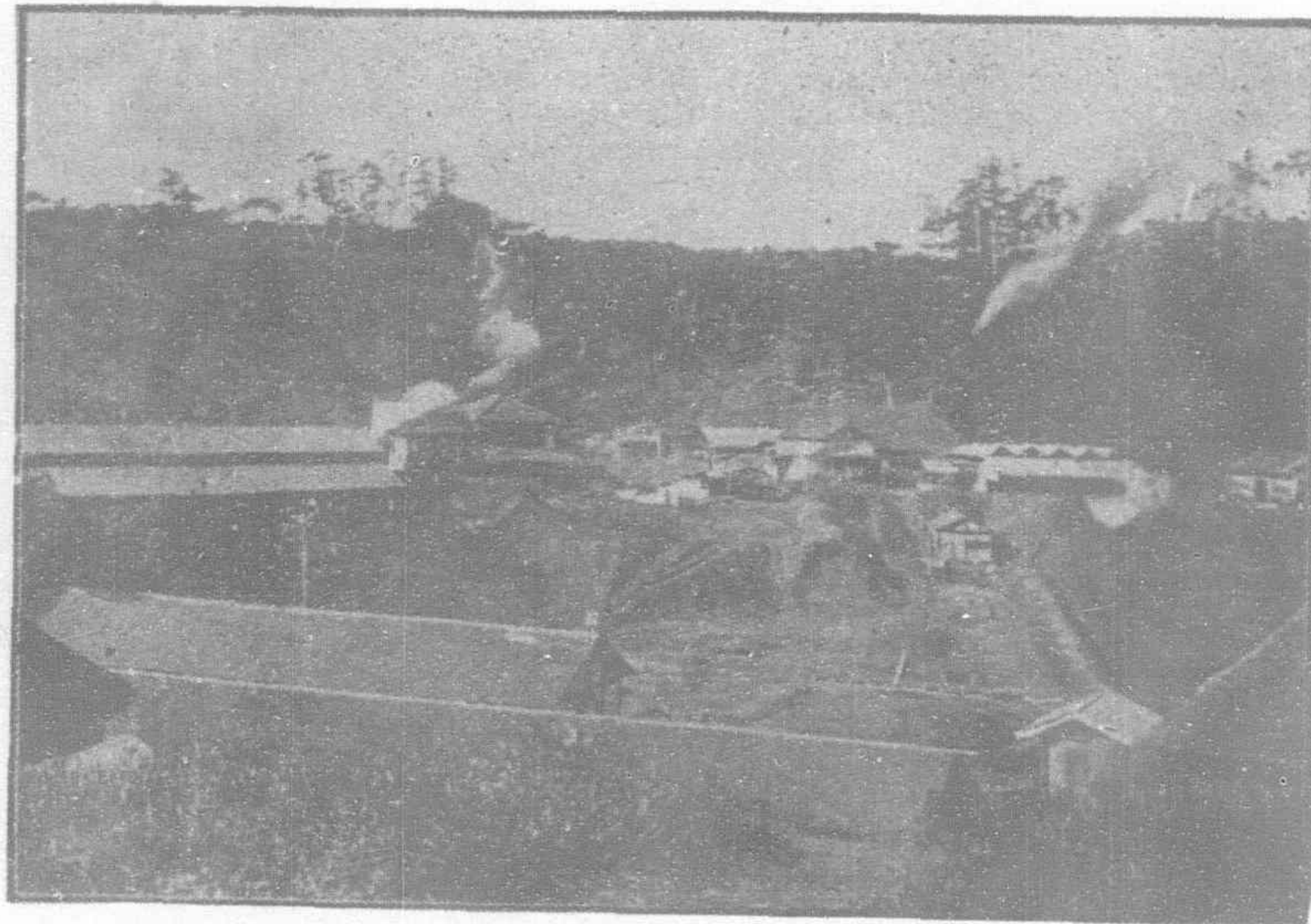
Underground and Surface Transport.—Rails are laid on in the chief underground roads,



YUNOKIBANA COLLIERY



KIRINO MINE, OHNOURA COLLIERY



SHIRAIWA NO. 2 MINE, OHTSUJI COLLIERY

on which 800-pound cars are run by hand. For the traction of the mine cars there are seven winding engines installed at pit mouths. After leaving the pits, the coal is conveyed to screening houses for cleaning, and, when it is prepared, is transported either to Wakamatsu or Moji as follows. At the Ohtsuji No. 1 mine, the coal is conveyed by horse traction to Nakama station on the Chiku-Ho branch of the Kyushu railway, and thence either to Wakamatsu (9 miles) or Moji (20 miles). At the rest of the mines, the products are carried 13 miles down the canal to Wakamatsu.

YUNOKIBARU COLLIERY.

Location.—This colliery is situated about one mile southwest of the Azamibaru station on the Karatsu branch of the Kyushu railway. The mining concession covers an area of 2,423,867 *tsubo* (about 1979 acres).

History.—Mining operations were formerly carried on by two parties of owners, one at Yunokibaru and the other at Hachinosu. The mining work, in each case, was on a very limited scale, and no noticeable progress had been made under their ownership. These two mines came into the possession of the Company in 1899, and great improvements have since been effected. A mining railway has been constructed from the mines to the Azamibaru Station, and endless rope system of conveyance has also been adopted for transporting coal from the pit mouths to the screen house.

Output.—The output in each of the three years ending 1902 was as under:—

Year.	Tons.
1900	35,274

1901	57,655
1902	58,998
Total	151,927
Monthly average	4,917
Daily average	164

Coal Seams and Character of Coal.—There are four workable coal seams, and the excellence of the quality of the coal can be judged by the following analysis made by the Imperial Steel Works:—

Moisture	Volatile Matter	Coke	Ash	Sulphur	Heating Value calories
1.6	44.8	47.3	6.3	3.0	7,700

Method of Working, etc.—The method of mining is that of the longwall and pillar and room systems combined. There are eight "special" pumps at work for drainage purposes. The length of the drift is 3,090 feet. The workmen employed in and out of the mine workings exceed 1,000.

By way of note we may mention that, of the Yoshikuma, Oh-ita, Ikeda, and Tsubakuro mining concessions, the first three are not yet operated, while the last named, a mine having a daily output of about 200 tons, has only recently come into the possession of the Company.

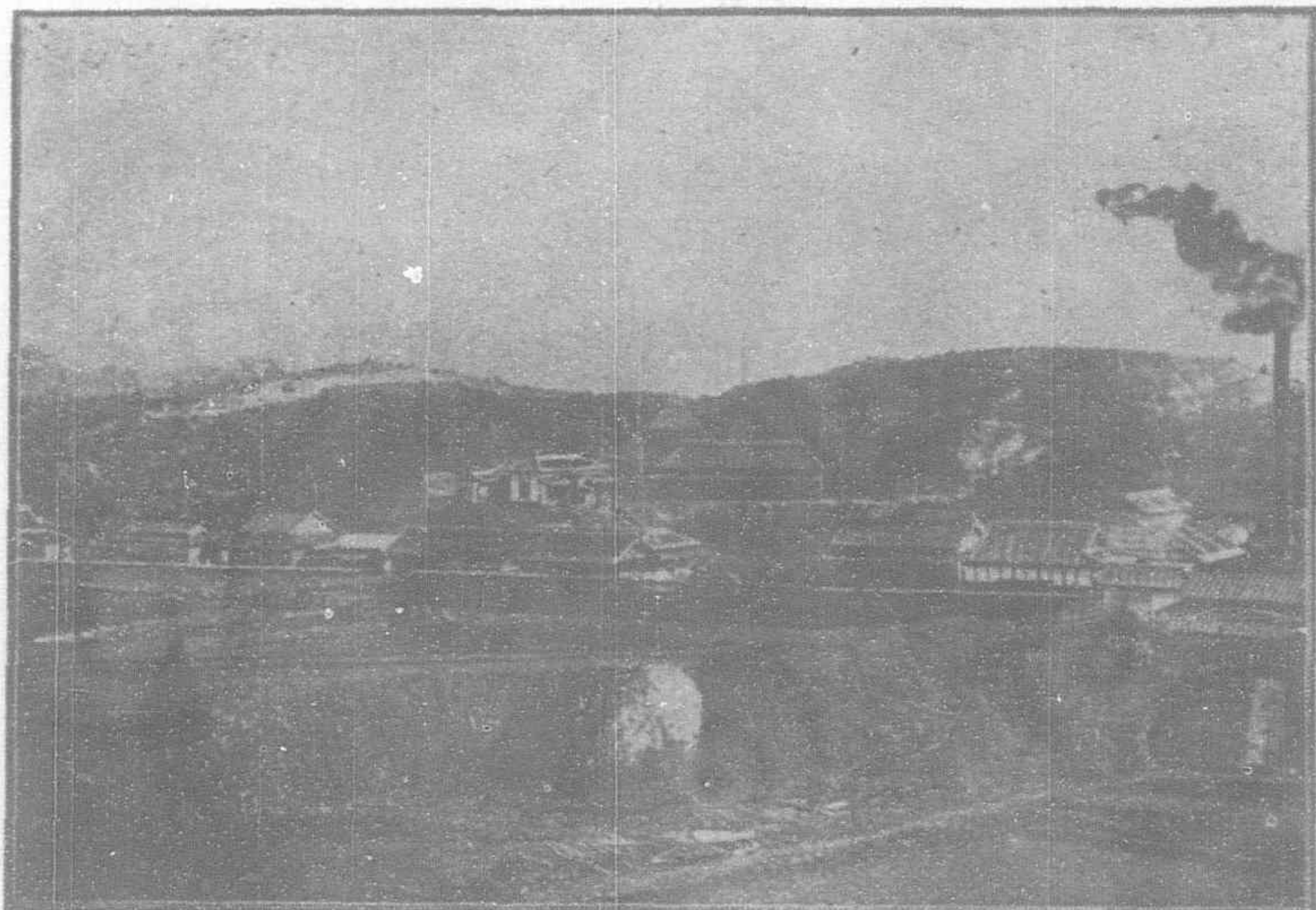
A MODERN SUGAR FACTORY IN THE STRAITS SETTLEMENTS

The factory, designed for the production of muscovado sugar by a new process, is capable of turning out 50 tons of sugar per diem. The mill is a powerful one, the rollers being 72 in. by 36 in., with journals 17 in. in diameter and 24 in. long, the other parts being in proportion.

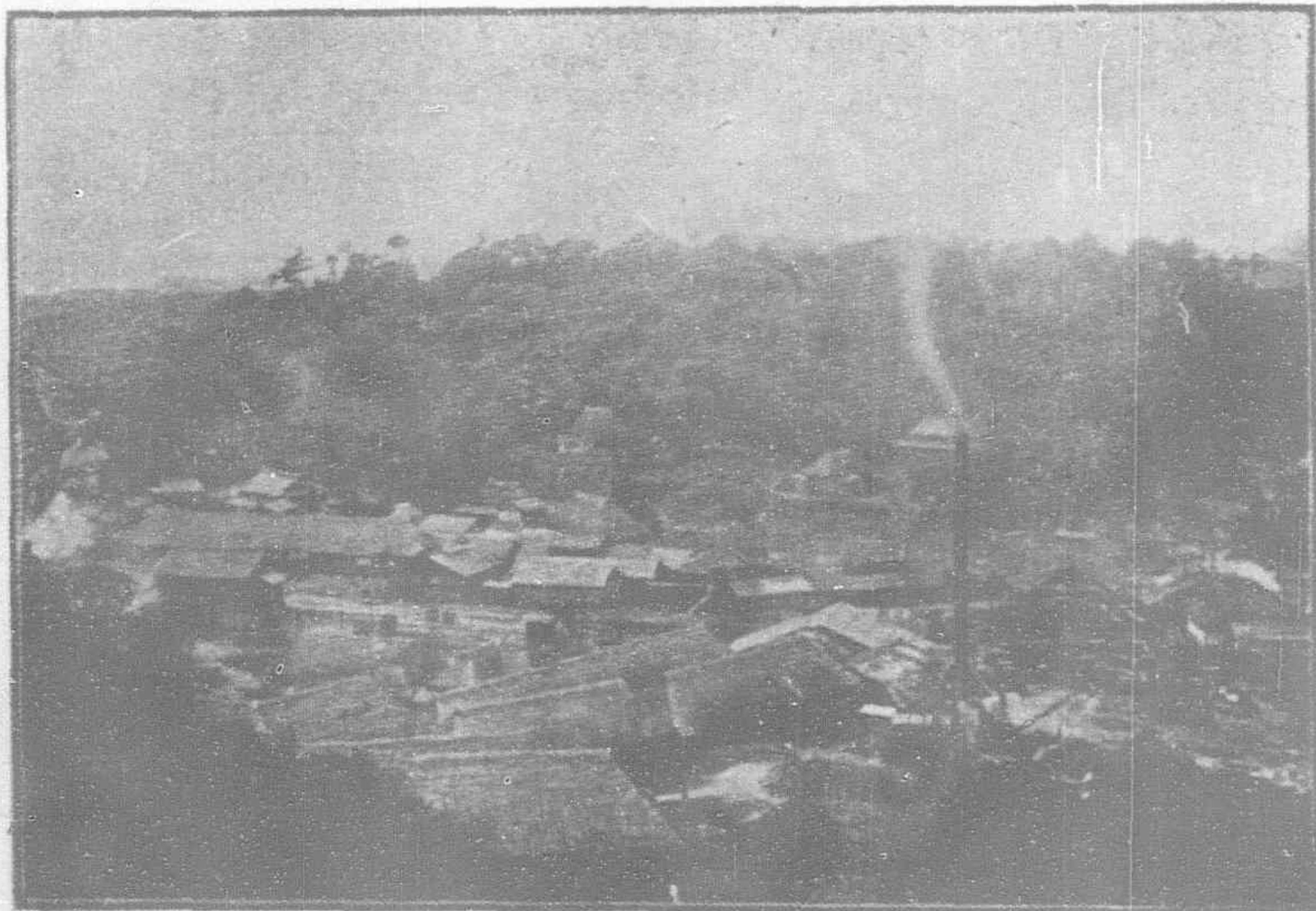
The engine of the Corliss type of frame has a stroke of 4 ft. Space has been left for the eventual addition of a second mill, for double crushing. There are four large multitubular boilers, fired by two furnaces in the Cuban style, the megass providing fuel sufficient to run the entire factory.

The juice from the mill is pumped through a powerful three return juice heater into the settling tanks. The juice is then concentrated in a Harvey triple effect evaporator, from which the syrup is drawn at a high density, and runs direct on the finishing battery, which is the essential point of difference in this process. While in this battery, the remaining water is driven off till a boiling sugar mass is obtained, which on being run into coolers and kept in motion, turns into a dry sugar powder varying in color from light yellow to brown. The heat is regulated in the battery so as to prevent charring of the concentrated sugar mass, by special means, which is the subject of a patent owned by Mr. W. M. Miller, factory manager and chemist to the Penang Sugar Estates Company. This process, which has now been at work on the Caledonia Estate during two crops, and on a large scale on the Gedong estate for some months, has proved very successful. The commercial sugar made on the latter estate amounts to 117 per cent of the sucrose contained in the juice, with an average polarization of 83.5. The analysis gives:

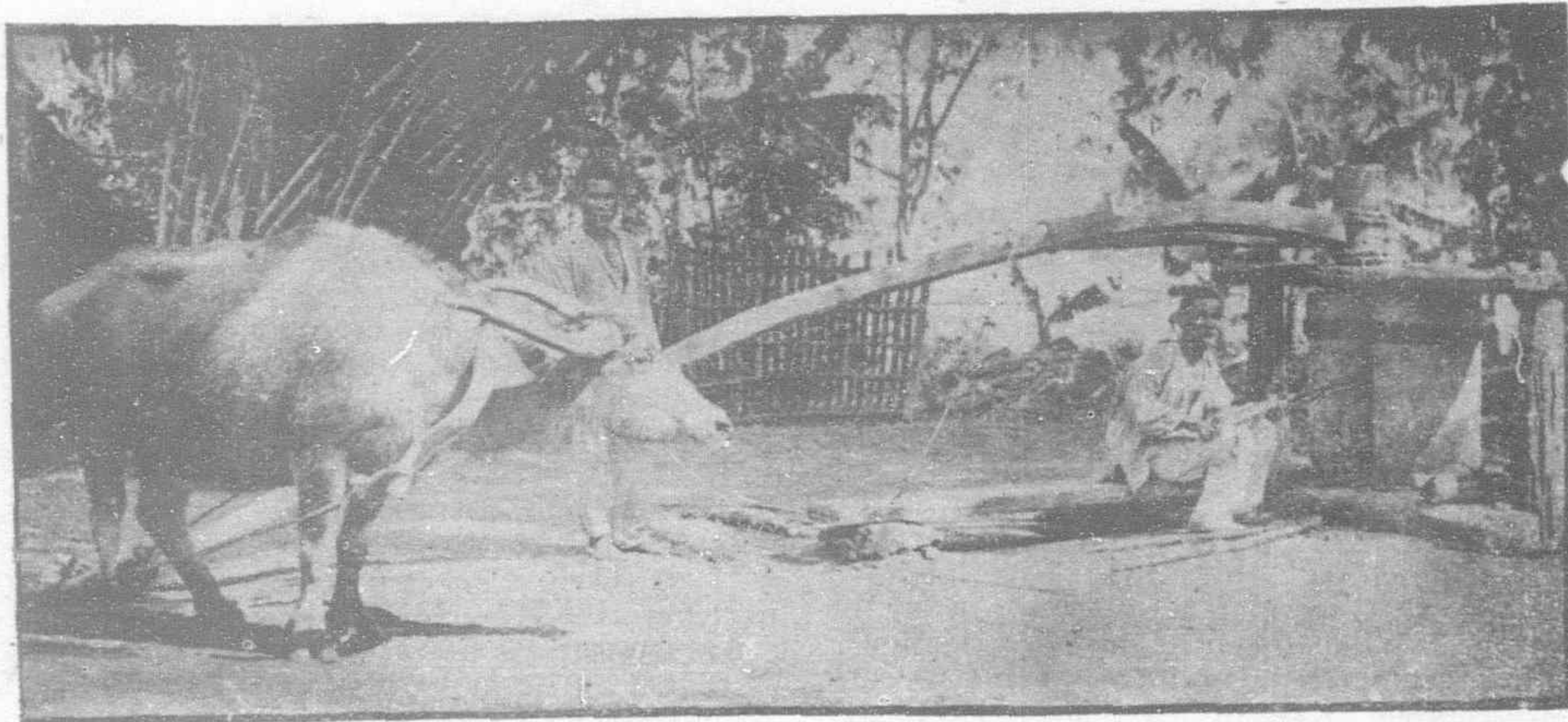
Sucrose	83.5
Glucose	9.4
Water	3.5
Ash, etc.	3.5
	100



OHNOURA MINE



NO. 1 MINE, OHTSUJI COLLIERY



PHILIPPINE SUGAR MILL, ROLLS OF HARD WOOD

In consequence of the process being so simple, the only loss that takes place is in the filter press cake; the loss due to inversion hardly exists, owing to the rapidity of the process and the regulation of the heat while in the battery, and does not affect the return of sugar in the slightest, as the whole of the glucose as well as the sucrose is got in the dry sugar powder.

The building and plant of machinery was made and provided by Messrs. McOnie, Harvey & Co., Ltd., of Glasgow, who are to be congratulated on the efficiency of the factory as a going concern.

The second factory of the S. S. Co. is now in course of erection, and will in all respects be a duplicate, as regards machinery and process, of that now described.

It is thought that the above process, on account of its simplicity and cheapness, might be adopted with advantage in some of the West India Islands, which are still turning out muscovado sugar by the old process.—*International Sugar Journal*.

THE AGRICULTURAL COLLEGE AND EXPERIMENT STATION IN NEGROS

(From Report of Bureau of Agriculture)

The construction of the new buildings for the college is entirely in the hands of the Insular Architect and, I understand, work will begin as soon as the rainy season is over. Plans have all been made and approved, money appropriated, etc.

La Granja, the college farm, is a large one, about 1,900 acres in extent. The land is very fertile, and enjoys one of the prettiest locations I have seen in the islands. This place, like San Ramón, is too large and rich to use exclusively for experiment and demonstration. It should also be used to produce revenue. Sugar cane, under present conditions, seems to be the most promising crop for this place. This is in the best sugar region of the islands. The islands export 4,000,000 gold worth of sugar per annum. The majority of this comes from Occidental Negros, and La Granja is near the center of this large industry. An object lesson in up-to-date sugar methods is sorely needed. The mills generally in use are 15 to 20 years behind the times. It is variously estimated that only 50 to 60 per cent of the juice is extracted by these miserable excuses for mills.

The entire juice, after liming and a little skimming, is boiled down into a solid mass, and is powdered up and called sugar. That is, there is incorporated in this sugar 20 to 25 per cent of molasses that could not be crystallized and, hence, has to be thrown out at the refinery.

Three samples of Negros sugar sent by us to the Government Laboratories for analysis showed an average of 78.7 sucrose of crystallizable sugar, 7.2 glucose or non-crystallizable sugar and 1.41 per cent of ash. When it is remembered that every pound of glucose prevents from one to two pounds of cane sugar from crystallizing, and every pound of ash from 4 to 5 pounds, it can be seen why this so-called sugar, is low in price. It will fully explain why this sugar is worth only 1.8 cents gold

in Iloilo, while 96° centrifugal sugar should be worth 2.60 cents gold, for shipment to the United States. A modern sugar factory turns out about 90 per cent of its product polarizing 96°. So the sugar planters undoubtedly lose over one-half of the possible values of their sugar cane.

Their economy, or rather want of economy, on the plantation is just about as marked as in the mill. Very small, steel-pointed, wooden plows and carabaos scratch an acre in four to six days. After about the third scratching, interspersed with a good deal of digging and burning of larger weeds, the land can be planted. Every operation on the plantation seems to be done by the slowest process. I have seen a force of 60 men working in the yards of a small mill, sunning the bagasse to get it dry enough to burn. In modern plants, even after mixing considerable water with the bagasse between the different sets of rollers, the resulting product is always dry enough to burn and make all the steam necessary.

La Granja has one of the old Spanish mills. It is capable of recovering half the values out of perhaps 150 acres of cane. So its limit will about be reached the coming grinding season. The larger the capacity of such a mill as we have, the more money will be lost growing cane for it and running it.

There is one important item of economy that the Negros planter has down to fine point. The average laborer does not receive quite sixteen cents gold a day in money and food combined. I have seen fifty and a hundred sitting on their tools, waiting for daylight to begin a day's work. Perhaps the desperate straits of planters, owing to poor methods, compel such low wages.

If we accept the cost of manufacture in other sugar producing countries as a basis, with an up-to-date mill, costing \$250,000 gold, sugar can be made and put in Iloilo at a cost, I believe, not to exceed 1.25 cents gold. I have abundant evidence for making this estimate, in the cost in other countries. La Granja can produce 5,000 tons of the 8,000

tons such a mill would have the capacity to turn out, and have plenty of land left for other purposes. The entire place is surrounded by the finest of cane land.

I understand that it has all along been the intention to have a model sugar estate and manufacturing plant. The best object lesson is one that is commercially profitable. With a mill the size of the one mentioned, the very best talent could be employed to operate it and, under present conditions, it would be enormously profitable.

For a student of the world's sugar situation, the prospect is bright. The abolition of bounties in Europe has reduced production and greatly increased consumption. Cuba seems to have reached her limit, with her present labor supply, which is being paid 75 cents to \$1.00 gold a day. The Panama Canal work will certainly materially affect the tropical labor market for many years to come in the western world.

I would, therefore, strongly urge that this matter be taken up at once. By means of the thirty horses just forwarded there and a steam plow, cane enough could be grown by the time mill could be finished, to put it to work and keep it busy the entire season. I beg to suggest that, if the Commission has the power to make such a contract, most of the payments be deferred for one or more years at a reasonable rate of interest.

NEW FIBER MACHINE

BURN & CO., CALCUTTA.

The following communication to the Editor appears in a recent issue of *Capital*, the leading financial journal of the East, published in Calcutta: The name of Burn & Co. is a guarantee of good work, and any machine emanating from their shops carries with it the assurance that it will do all that is claimed for it. We recommend Philippine firms interested in this matter to communicate with Messrs. Burn & Co., Howrah, Calcutta, for further information.

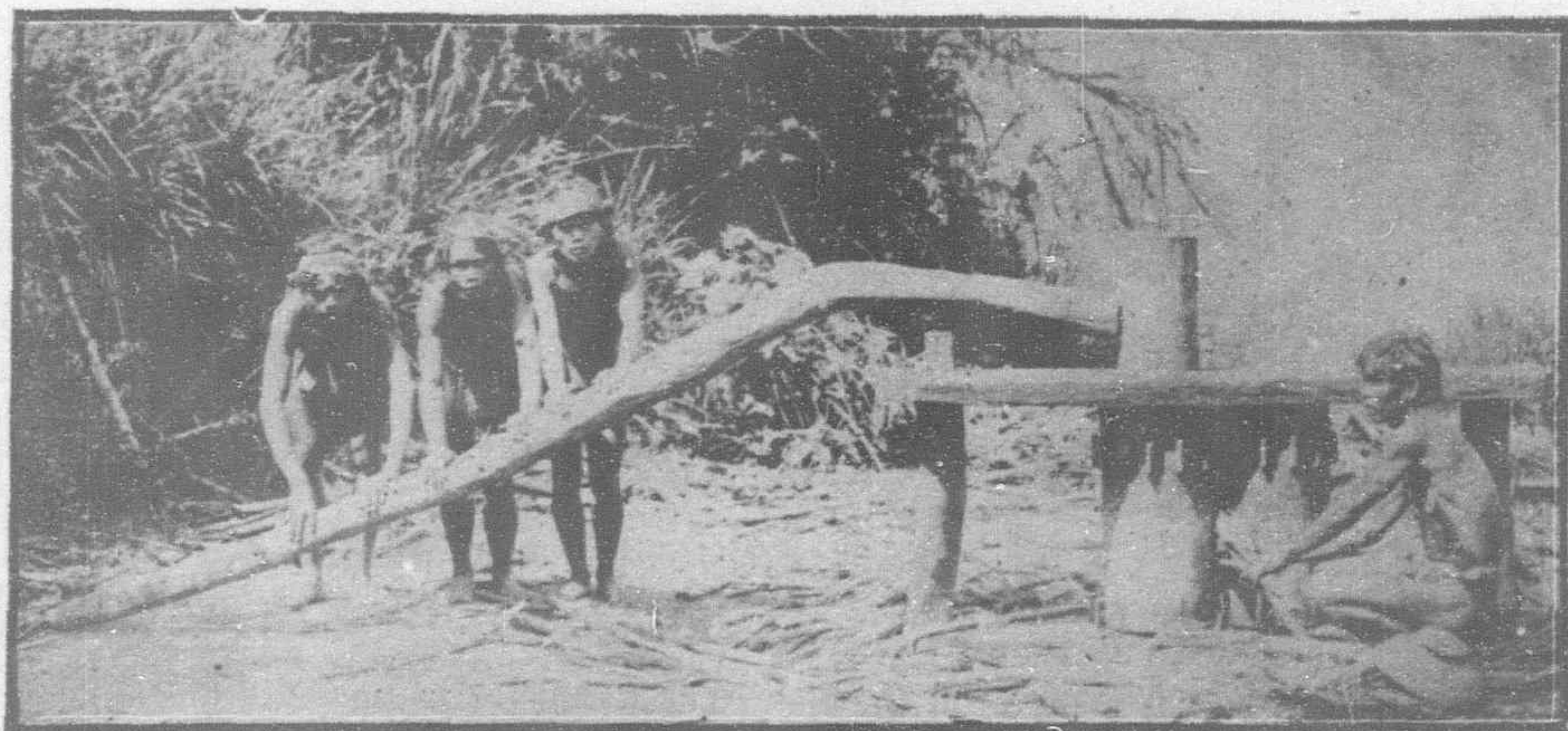
TO THE EDITOR OF "CAPITAL."

Sir:—We beg to send you herewith a sample of Sisal hemp, decorticated in a new patent machine made by us; it is not as good as it might be, as the leaves were a week old before they were put through the machine.

The leaves are fed into the machine and go right through, there being no pulling out and reversing, and the fibre is practically clean on delivery, a slight washing removing any scraps left adhering, and, after it is dried in the sun, the result is the sample we send you. This is the fibre out of one leaf.

Our machine will tackle about 40 to 50 leaves per minute, but we think that in regular work and when the attendants got used to it, the output could probably be doubled or trebled. The same machine will also treat Rhea, the only thing necessary to alter being the setting. This fibre being much finer requires nicer adjustment, but that is all, and this can be done in a matter of a few minutes.

(Continued on page 39.)



IGORROTE CANE MILL

ENGINEERING AND CONSTRUCTION

PERSONAL

THE ENGINEERS' INSTITUTE, PENANG.—The annual general meeting of the members was held on Dec. 5th. The members proceeded to elect a president, committee, and election committee for the ensuing year, with the following results:

President.—Mr. J. S. Shearer.

Committee.—Messrs. Toft, Fotheringham, Russell, Irving, Van Cuylenburg, Campbell, Thomson, Butler, Foggie, Boteler, Graham, and Harley.

Additional Members of Election Committee.—Messrs. Gilroy, Gall, Anchant and Capt. Neilsen.

Mr. Edwin Mackintosh, of 77 Lancaster Gate, W., and of Ickleford Manor, Hitchin, Herts, of the firms of John Swire & Sons and Butterfield & Swire, of 8 Billiter square, E. C., and of Hongkong, China, and Japan, merchants and shipowners, who died on Aug. 11 last, left estate of the gross value of £259,359, the net personalty being sworn at £257,154.

An electrical adviser to the Government of India is to be appointed. He will be required to render advice to local governments, state railways, municipalities and district and local boards.

The general managers of the Green Island Cement Co., Ltd. (Messrs. Shewan, Tomes & Co.), have issued an interesting booklet with regard to the cement.

Mr. E. T. Arnold, formerly superintendent of the Tambun Mine, is now representing Messrs. Huttenback Bros. & Co., of Penang.

Mr. J. J. MacBean, Managing Director of Messrs. Howarth Erskine Co., Ltd., has returned to Singapore after a few months' vacation in England.

Mr. Openshaw, of the F. M. S. Railway service, has proceeded to Johore, where he has been entrusted with the construction of the Johore State Railway from Johore Bahru northward to meet the section being constructed from Kuala Gemas southwards. He will commence operations in a very few days.

Mr. H. C. Barnard has been appointed Divisional Engineer, Selangor, from 1st January, 1904, in succession to Mr. G. W. Fryer, whose appointment as Resident Engineer, Seremban Extension, takes effect from the same date.

M. DE DEYN has been appointed manager of the Sino-Belgian Bank at Hankow, and his nomination has now been officially approved. With the interests that the Belgians hold in the Hankow region, the post is an important one, and Mons. Deyn's countrymen are to be congratulated on having secured so capable a director for their bank in the Northern Port.

ELECTRIC LIGHTING, TRACTION, POWER, ETC.

ELECTRIC LIGHTING, DELORAIN, TASMANIA.—The lighting of Deloraine with electricity is the subject of a bill now before the Tasmanian Legislature. It empowers the municipal council to borrow a sum or sums not exceeding £5000 with which to install plant for supplying electricity for public and private purposes.

ELECTRIC TRAMWAYS, BANGALORE, INDIA.—The near approach of electric lighting in Bangalore has raised the old question as to whether electric tramways would or would not be an improvement to the station.

THE KASHMIR ELECTRICAL SCHEMES.—We understand, says the *Madras Mail*, that the power station is likely to be at Rampur, on the Jhelum River, where with a six mile feeder channel it has been found possible to get a waterfall drop from the river of 450 feet or so. It is calculated that even with the minimum flow in the Jhelum it will be quite possible to obtain 100,000 horse-power at this spot. This is certainly a magnificent asset for Kashmir, far larger than anything that the Mysore Government can obtain from the Cauvery. When the installation of the power station is completed, it will be possible to work the proposed Kashmir Railway electrically along its whole length of 180 miles, and also to provide power for industrial purposes in Srinagar, Abbottabad, Murree, and Rawalpindi. But even more important, perhaps, is the proposal to utilize the power in operating dredgers electrically for the purpose of deepening the river in the Kashmir Valley, and so minimizing the floods which under existing circumstances devastate the country periodically. This plan will further allow of a very large tract of land being reclaimed, and will also permit of the storage of water in the Woollar Lake for sale to the Punjab Irrigation Department. How far Major de Lotbiniere has gone with his investigation of this concatenation of schemes we do not know; but it is obvious that a great deal of work is involved, even in sketching out the bare preliminaries.

UNDERGROUND CABLES, MADRAS.—A scheme is being considered for laying wires of the telephone system in Madras underground. A representative from England of the Oriental Telephone and Electric Company has recently been surveying the system in Madras with this end in view. Considering the magnitude of the scheme the Telephone Company will take some time before carrying it out.

ELECTRIC LIGHTING, PERAK.—It is said that Messrs. Howarth Erskine, Ltd., have secured the important contract of fitting up the Sultan of Perak's palace at Kuala Kangsar with electric light. One of the firm's electrical engineers is to leave Penang for Kuala Kangsar in a few days' time with the generating and other plant necessary for the installation, which is expected to occupy between two and three months in completion.—*Penang Gazette*.

RANGOON TRAMWAYS.—The new tramway company in Rangoon will have to pay an annual track rent of 2,000 rupees per mile of single track, and 3,000 rupees per mile of double track.

TELEPHONE SYSTEM, F. M. S.—The establishment of telephone communication between Ipoh, Batu Gajah and Tapah is estimated to cost \$20,000.

LONG DISTANCE TELEPHONES, JAPAN.—A telephone service between Sasebo and Tokio, a distance of about 1,000 miles, has been completed and is now being tested by the authorities. It is reported that the service will be inaugurated in a few days between Sasebo and Moji, Hiroshima and Tokio.

CAWNPORE STEAM TRAMWAY.—It is proposed to form a company with a share capital of 10 lakhs, for the construction of the Cawnpore-Hamirpur Steam Tramway, for which the concession has been granted to a Cawnpore firm. The line will be on the 2' gauge and will have a length of 35½ miles. The Cawnpore District Board has agreed to guarantee interest on the working capital at 4 per cent, on condition of receiving a moiety of surplus profits over that figure.

ELECTRIC LIGHT PLANT, TIENTSIN.—The power for the electric lighting in the French Concession having been found inadequate for present and any future requirements, two new Belleville boilers and other necessary machines have been fitted up in the very quick space of time of 48 hours.

ELECTRIC LIGHTING PROGRESS, PENANG.—Up to the end of November 74 private consumers have been connected and are taking current from the Municipal Electric Mains and about 20 consumers were waiting to be connected. The electric light is now installed in the Municipal Abattoirs and the Pig Market, and by the end of the year there will be no more punkahs in the Municipal Offices, electric fans being installed in their place.

ELECTRIC TRAMWAY, PENANG.—The contract for laying the permanent way for electric trams and for lifting and removing old rails and making good the road, has been given to Mr. R. Young.

LONG DISTANCE TELEPHONES, PEKING.—The telephone service established at the capital has been inaugurated and the long-distance service to Tientsin is expected to be opened to traffic in a week or two.

THE TOKIO ELECTRIC RAILWAY CO. held a general meeting on December 17th, when the accounts of the last half year were declared as follows: Net profit-Y-424,931.38; of this sum, -Y-21,246 is set apart as legal reserve and -Y-20,246 as special reserve; -Y-275,000 is paid as dividend; -Y-69,146 to the Government for the use of public roads; -Y-2,500 to employees as bonus; and the remainder is carried forward to the next account.

ELECTRIC LIGHTING, IPOH, F. M. S.—For the electric lighting of Ipoh a first vote of \$90,000 has been provided for in the Perak Budget.

ELECTRIC LIGHTING, KUALA LUMPUR, F. M. S.—The electric lighting of Kuala Lumpur is estimated to cost \$43,000 annually to maintain it. The installation will roundly cost \$880,000.

ELECTRIC LIGHTING, NINGPO, CHINA.—The contract for electric lighting machinery for Ningpo has been placed with Messrs. S. Tshisaka & Co.

ELECTRIC LIGHTING, PENANG.—The arc lamps installed on the new pier by Messrs. Howarth Erskine, Ltd., are now constantly in use and great improvement in ease of working has resulted.

WAIPORI FALLS SCHEME, N. Z.—The Dunedin City Council have acquired the rights and interests of the Waipori Falls Electrical Co., Ltd. With such alterations as this change entails the enabling bill is being pushed through Parliament.

WIRELESS TELEGRAPHY, SIAM.—Connection by wireless telegraphy has now been established between Bangkok and Kohsichang, an outlying islet of importance to the shipping interests. It is the opinion of the local shipping firms that the Bar Lighthouse ought to have a wireless installation, and that the same connection ought to be made with the quarantine station at Koh Pai. In addition it is probable that the connection of Bangkok with some points in the Malay Peninsula, and with Pitsanuloke in the north will also be considered.

ELECTRIC LIGHT, SUEZ.—A contract has been awarded to G. Beyts & Co., Suez, Egypt, for an electric light system for that city.

COLOMBO ELECTRIC TRAMWAYS.—The track is to be relaid early next year with 95 lbs. a yard rail as against 67 lbs. a yard, the weight of the present rail. There will be a specially heavier section for use on curves only, weighing 101 lbs. per yard. It has been suggested that the rails should be welded at their joints by the Thermit process.

HYDRAULIC MACHINERY, KUALA LUMPUR ELECTRIC PLANT, F. M. S.—Tenders were received at Kuala Lumpur, up to noon of the 15th December, 1904, for the sluice gates, actuating mechanism screen and regulator for the hydraulic section of the electrical works, Kuala Lumpur.

HANJIN ELECTRIC RAILWAY, KOBE.—The board of directors of the Hanjin Electric Railway Company propose to divide the line between Osaka and Kobe into five sections and to charge 5 sen on each section as the most advisable scheme for fares.

MUNICIPAL LIGHTING, F. M. S.—Taiping will be lighted next year by Sim Tuah at the rate of \$1.15 per lamp.

For purchase and erection of Kitson lamps in Taiping \$6,500 has been provided.

An acetylene light installation at the Astana, Sri Menanti is being provided for next year at a cost of \$2,000.

Seremban street lighting is to be done at the following rates per lamp per mensem:—Kitson, 1000 c. p., \$17; Kitson, 500 c. p., \$11; kerosene oil lamps, \$1.70

WATERWORKS AND IRRIGATION

IRRIGATION, SIAM.—Mr. Consul Beckett's report from Bangkok contains, says *Commercial Intelligence*, a notice of an extremely interesting report on the question of the irrigation works which should be undertaken by the Siamese Government. It is by the Director of the Irrigation Department, an officer of the Government of Netherlands India, whose services have been temporarily placed at the disposal of the Siamese Government. He recommends a scheme for irrigation and drainage embracing (1) the improvement of the "klongs," or canals of different sizes already existing in most parts of the Lower Menam Valley, and (2) the construction of a supply system consisting of a great weir across the Menam River at Chainat and of three main canals—one on the right bank, one on the left—and a canal called the "Supan Main Canal," reaching from the weir on the Menam to the mouth of the Meklong River, with head sluices, distributory works, and navigation locks, and of a system of distributory canals with proper arrangements for water supply and navigation. Various difficulties present themselves to the execution of such a scheme, but there seems to be no doubt that much may be done for the country by irrigation. In the meantime minor works are being carried out in the immediate vicinity of Bangkok, such as the draining of the site of the silk culture establishment in order to prevent the mulberry trees being damaged by too much water, with which is connected the draining of the adjoining marsh for the new site of the royal educational establishment known as King's College.

CAUVERY IRRIGATION EXTENSION PROJECT.—The estimates for the Cauvery Irrigation Project have been sent by the Government of Madras to the Government of India. It is proposed to construct a reservoir at Nauranjipett, 24 miles above Bhavni. Its capacity will be 40,000 million cubic feet, and it is designed to protect 1,177,330 acres of old and new cultivation.

WATER PROBLEM, BANGKOK.—Complete success has attended the latest attempt to obtain a supply of water by boring in Siam.

The water was wanted by the Royal Railway Department at the Ban Phaji junction on the northern line, and Mr. Minto, who had the work in hand, has completed it and handed it over to the R. R. D. A plentiful supply of excellent water was found in gravel at a depth of 100 meters.

SHIPBUILDING, MARINE, ETC.

NEW STEAMER, N. Y. K.—The *Tango-Maru*, the largest ship ever constructed in Japan, was launched Dec. 12th from the Mitsu Bishi Dockyard and Engine Works' yard at Tategami. Mr. R. Kondo, President of the Nippon Yusen Kaisha, for whom the vessel has been built, and Mr. H. Shoda, General Manager of the Mitsu Bishi Company, were amongst those present. The ceremony was quite private, no invitations having been issued to the general public or the press.

The *Tango-Maru* will have a gross tonnage of 7,300 tons. Her dimensions are as follows: Length, 445 feet; breadth, 52 feet; and depth, 33 feet 6 inches. The engines are to be of 5,500 horse power and capable of a speed of 15 knots. She is intended to carry 60 first-class, 20 second-class, and 320 third-class passengers. The Nippon Yusen Kaisha have had the steamer built for their Seattle line. It is expected that she will be ready for sea in February next.

NEW STEAMER FOR NETHERLANDS INDIA.—On the 29th of October there was launched from the yard of the Netherlands Shipbuilding Company, in Amsterdam, the screw steamer "Sultan of Koetei," constructed for account of the Royal Company for working petroleum sources in Netherlands India. This vessel is exclusively fitted for the carriage of petroleum, kerosene, and benzine, and has the following dimensions:—Length, 240 English feet; width, 42 English feet, and hold 20 English feet. The head room under the deck consists of nine, and that above the same (the so-called trunk) of six perfectly closed tanks for oil, and moreover, the places for fuel necessary for the boilers will contain about 250 tons astatki. In view of fire risk the tanks are separated from the foreship, the boilers and engine-room. The steam engines, of the triple-expansion system, have cylinders of 21 in., 32½ in., 55 in. diameter, and the speed is 10½ English miles an hour. Vessel and machinery are made according to the highest requirements of Lloyds', and the construction is even exceeding the same in connection with the special service of the steamer for the traffic in the Javanese seas and the large rivers in Netherlands India.

OSAKA SHOSEN KAISHA, NEW STEAMERS.—The business of the Osaka Shosen Kaisha is in a thriving condition. Even before the war the company was handicapped by the scarcity of vessels on account of the extension of its services, and since the outbreak of war about half the number of the steamers have been taken by the Government for use as transports. The result of this is that the O. S. K. has had to charter 38 steamers (18 foreign) with an aggregate tonnage of 40,151. To supply the present want and to meet requirements after the war, the company has ordered steamers by the dozen. Two are being built of 2,000 tons each, two of 1,200 tons, one of 1,500 tons, four of 400 tons, two of 1,250 tons, and three of 350 tons. The directors, at a recent meeting, adopted a resolution to build two more steamers of 1,600 tons, each, and all now being built (at different yards in Japan) are expected to be completed during next year. According to the vernacular papers, the total revenue of the company for the three months ending the 31st ult. amounted to ¥3,045,869, of which ¥2,232,764 was paid for working expenses, leaving a net profit of ¥813,105. Such a large profit is unprecedented.—*Kobe Chronicle*.

TOYO KISEN KAISHA, NEW STEAMERS.—The Toyo Kisen Kaisha is going to build two of

the biggest steamers that ever sailed out of San Francisco.

Plans for the monster ships have already been made, but the place of building has not yet been decided upon. The choice lies between America, Japan and England.

The vessels are to be at least 15,000 tons register, or nearly 1,700 tons bigger than the Mongolia or Manchuria, the queens of the Pacific Mail fleet.

The Japanese company is undecided as to where the vessels shall be built, for commercial reasons. If they are built in America or on the Clyde, the company gets a good subsidy, but if built in Japan it receives twice as much.

The Tōyo Kisen Kaisha, up to the time of the war between Japan and Russia, operated three steamers between San Francisco and the Far East. The vessels were all subsidized by the Japanese government, and it was part of the contract with the government that they should be turned over to it in time of war. All three vessels were impressed, but the "America Maru" was subsequently returned to her owners. The "Nippon Maru" was converted into an auxiliary cruiser and used as a dispatch boat for Admiral Togo's fleet.

The "Hongkong Maru" was used as a transport and report states that she sunk with all hands on board. Whether the story is true or false, the Toyo Kisen Kaisha Co. evidently has little hope of recovering the "Hongkong" or the "Nippon Maru" for some years to come, if at all. Hence the building of the two monster ships.

While the ships of the Japanese company have been off the line, the Pacific, Manila and Occidental and Oriental lines have been doing a flourishing business, but with the return of affairs to normal conditions the companies have little hope of successful competition with the Japanese.

Just before the war Japanese shipbuilding had been given a great impetus, and the Mikado's flag was flying over the commerce of the Far East. Not a few British ships had been put out of business by the shrinking of trade in favor of the little men. The war brought on a change, but evidently the Japanese have awakened to the future possibilities of the trade in the Far East, in connection with the Pacific coast. The subsidies of the government will stimulate the building and purchasing of vessels and the organization of new lines.—*N. Y. Commercial*.

THE KAWASAKI SHIPBUILDING COMPANY, Kobe, is preparing to commence work on the construction of six shallow-draught gunboats of 720 tons displacement each and four second-class torpedo boats, all ordered by Viceroy Chang Chih-tung, of China. The amount to be paid for the ten vessels is four million yen, of which Yen 546,000 has already been received by the Japanese shipbuilders as a guarantee. It is reported that the whole of the vessels will be ready for sea by the end of 1906.

NEW STEAMSHIP LINE, CHINA.—It is stated that a Chinese syndicate has in contemplation the inauguration of a fast steamship service between Shanghai and Tientsin. Three boats are to be built at a cost of about £60,000 each, with a guaranteed speed of twenty knots, and to accomplish the trip from Bund to Bund in thirty-six hours. The boats will carry first-class as well as third-class passengers. In addition to this there are to be also built three river steamers, in the building of which special attention will be paid in regard to passenger accommodation and speed.

NEW NAGASAKI STEAMSHIP SERVICE.—The committee appointed by Governor Arakawa to forward the scheme for a new Nagasaki Steamship Company estimate that Yen 400,000 will be required to commence operations and suggest that, with this sum, two or more second-hand steamers be purchased in order to open a Korean service.

THE OKAWA TRANSPORTATION COMPANY'S new steamer *No. 1 Fukagawa-maru* has made her maiden trip from Wakamatsu to Tokio. The vessel is to engage in a fortnightly service between Kyushu and Shinagawa.

NEW YANGTZE STEAMERS.—It is learned that Messrs. Carlowitz & Co., Shanghai, have telegraphed to a certain authority in Foochow to the effect that, having understood the intention at Foochow is to contract a foreign loan, the firm undertakes to do this to the extent of between Tls. 300,000 and Tls. 500,000, half of which is to be paid over in the form of machinery. Further, that the two rivertime steamers which are being built in the Foochow dockyards shall, upon completion, be under the control of the firm, and shall be employed in navigating along the Yangtze for the conveyance of passengers and cargoes, and that certain substantial incomes must be offered which shall be taken as security for the loan.—*Universal Gazette*.

NEW JAPANESE DESTROYERS.—A torpedo destroyer built at the Yokosuka dockyard was launched on the 7th of December and named "Ariake" (The Dawn). Two destroyers, which are being built at the Kure dockyard, will be launched in the course of the next fortnight. One of them will be named "Fubuki" and the other "Arare."

A SHIPMASTER, K. Matsuyoshi by name, who lately ordered a steamer to be constructed by the Osaka Iron Works for a shipowner named S. Sawakuchi, at Hokkaido, is reported to have absconded with Yen 10,000, which the shipowner had remitted to him for presentation to the works as a guarantee.

THE KAWASAKI DOCKYARD may well congratulate itself today, says the *Kobe Herald* of the 16th of Dec., on the launch of the first gunboat constructed in Kobe. The "Kiang Yuan" is one of seven gunboats ordered by Viceroy Chang Chi-Tung of Liung Kiang. She is built of steel imported from England—the Japanese works at Yawata Steel Foundry being too busy to undertake the task—and she is to have two funnels and the same number of masts. The length between perpendiculars is 170 feet, breadth 28 feet, and depth 7 feet. The displacement is 565 tons, and the estimated speed is 13 knots. The vessel will carry 12 c. m. quick-firing gun, 12-pounder and 4 magazine guns, all of which are to be sent from Shanghai.

YAMASHINA MARINE WORKS.—It is reported that the Osaka Shosen Kaisha has presented a testimonial to the Yamashina Marine Works for the successful refloating of the company's steamer *Akashi-maru*, which had stranded off Taihanroku in South Formosa, and that a salvage of yen 40,000 has been paid to the works by the owners of the refloated steamer.

BRIDGES

HOOGHLY RIVER BRIDGE, CALCUTTA.—It is not unlikely that the question of the new permanent bridge over the Hooghly at Calcutta will be on the *tapis* this cold season. Although it is recognized that the present floating bridge will, with care and attention, be good to last several years, yet this does not obviate the need for a proper structure, the erection of which must ere long be faced. A new bridge would take probably five years to construct.

BRIDGE, F. M. S.—The Krian River Railway Bridge is to have a 100 ft. span added to it. The cost is put down at \$63,300.

BUILDINGS

HONGKONG BUILDING.—At the present time building operations in Hongkong are proceeding apace, and contractors are experiencing a boom, which is likely to continue, in the building trade.

One of the largest structures in course of erection is the extensive building which is

being constructed to the order of Mr. Ho Tung. The area of the land required for the building is about 35,900 square feet and it is stated that the cost of the land was something like \$280,000. It was acquired by the Hongkong Land Investment Co. from the Government and by them was disposed of to Mr. Ho Tung.

The building, which is being constructed by the well-known contractor, Wing Cheong Long, will consist of two godowns immediately facing the sea. It is directly in front of the Sailors' Home and stands between the Kowloon Wharf Co.'s godown on one side and the China Merchants' godown on the other. The two new godowns will have a height of 38 feet and a depth of 160 feet; on the north side the length will be 198 feet, while on the south the length is put at 251 feet. Following the principle of the majority if not all the godowns along the quays, the new building will be of two stories, and, so far as human ingenuity can arrange, it will be absolutely fireproof. It stands on a very good foundation of piles, and is built of bricks, cement, and lime concrete. The roof will be lined with concrete and pitch, on which tiles will be placed. Not only have precautions been taken against fire, but the building is stated to be also typhoon-proof. Iron shutters and doors have been or will be fitted up, and in every respect the structure represents the latest ideas in godown construction in Hongkong.

The extensive range of the godowns entitles them to wharfage accommodation of between 200 and 300 feet, but it is not proposed at present to proceed with the construction of wharves, although that will be done when the occasion arises.

The building was designed by Messrs. Palmer & Turner, the well-known firm of Hongkong architects. The cost, added to that of the land, is expected to exceed four lakhs of dollars.

GODOWN ACCOMMODATION AT CANTON.—The continued increase of trade at Canton is seen in the large increase of godown accommodation recently available, writes our correspondent. Two blocks are specially striking. The one constructed of corrugated iron belongs to Messrs. Butterfield & Swire. The other, not yet completed, is being built of brick, and is reported to belong to the Standard Oil Company. These buildings indicate where, in the future, accommodation will be provided. Butterfield's is built on the Honam side and the Oil Company's on the opposite side of the "Back Reach."

NEW HOSPITAL, CANTON.—Canton is soon to have another large, roomy, and well-equipped hospital. This new hospital owes its existence to the munificence of Mr. P. Doumer, who was at one time Governor of Annam. The building is capitolly situated, for though built near Ng Sin Mun, and, therefore, in a comparatively poor part of Canton, it is finely situated on the river's bank, and stands in extensive grounds of its own. The new building, built of red bricks and floored with European tiles, consists of two large wards, built on granite arches, about ten feet from the ground, besides sundry other provisions for students.

Every modern contrivance is in evidence, and that nothing may be needed to ensure efficiency, and the operating theatre appears, to the lay mind, to be perfect.

NEW HOTEL, KOWLOON.—The "Station Hotel" (Tsim-Tsa-Tsoi) is to be erected on Kowloon Inland Lot No. 402, and will front on Robinson Road. This Lot has a frontage of 100 feet on Robinson Road and a depth of 150 feet. The design shows a three-storied building on front wing and four storied to north and south wings. Each wing has wide verandahs to permit of every room having verandah accommodation. The front verandah is surmounted with towers, and the facade will have an elegant appearance. Eight European shops will be erected on the opposite side of Robinson Road so that in all probability this part of Robinson Road will

be the business centre of the future. The hotel will contain public bar and billiard room, private bar and billiard room, office, two dining rooms, and 44 large, airy, and well-ventilated rooms suitable for bedrooms, parlors, etc. The total number of rooms for public use will be 51, exclusive of roomy servants' quarters, kitchen, pantry, larder, scullery and laundry. There will be ample bathroom and lavatory accommodation with up-to-date sanitary appliances. Electric passenger and food lifts, electric lighting and bells will be installed, as well as gas lighting. Everything will be done to make the hotel thoroughly modern and worthy of the constantly growing Kowloon side. Rolled steel joists and concrete fire-proof flooring will be extensively used in the structural work. The directors are all gentlemen of good position, and the hotel will be under European management. The plans and specifications have been prepared by Mr. John Lemm, F. I. A., Architect. The work will be commenced shortly, and carried out under his supervision to as speedy a completion as possible.

GREEN ISLAND LIGHTHOUSE, HONGKONG.—The construction of the new lighthouse at Green Island has now been in progress for some time, and already a great deal of work has been done in the erection of the structure. The new light, raised 110 feet above the level of the sea, will be visible 18 to 20 miles off, and it will be placed in a modern and up to date lighthouse, where excellent quarters will be provided for the keepers. The foundations are 60 feet above the level of the sea and the structure itself should be fully 50 feet higher, so that the centre of the light is clearly visible a long way off on clear nights. It is not expected, however, that the lighthouse will be completed within four months. The construction is in the hands of the Public Works Department, who are doing their best to push on matters.

GOVERNMENT TOBACCO FACTORY, NAGASAKI.—The authorities have arranged to construct a Government tobacco factory at Nagasaki with a branch factory at Shimabara. The date for the formal opening of the factory at this town has been fixed for the 1st February next.

YI LUN TIEN PALACE, PEKING.—The Imperial Court returned to Nanhai on the 26th of the 10th moon (the 2nd inst.), and as on that day the completion of a new palace called the Yi Lun Tien was effected, the Empress Dowager accordingly removed to the new palace, while the Emperor still stays at Ying-tai. During the occupation of Peking by the Allied Forces in 1900, the Yi Lun Tien, then everything in its antique form, was turned into the military headquarters of Count Waldersee, and some time after, probably through an accident, it was set on fire. Now foreign-styled buildings have been erected in its place, on the same site, with a bridge made of precious stone in front. One of these buildings is designed for the reception of foreign officials, and the other for the resting place of the Empress Dowager. It is estimated that the building of the residence of the Chief Eunuch Li Lien Ying cost no less than Tls. 5,000,000, but, strictly speaking, only 30 per cent of this enormous sum of money was spent on work for this purpose. That is to say, only \$15,000,000 were spent on building work, the rest of the money having been absorbed by the building contractor and inspectors, and other officials having charge of the work.—*Universal Gazette*.

NEW BUILDINGS, TIENTSIN.—Two fine buildings are being erected in Rue de France, opposite St. Joseph's School, for Messrs. Vosy & Co., and the Tientsin Toilet Club. The buildings are almost completed, and the former firm have already notified their patrons that they will enter their new premises on January 1st, next year.

Seventeen thousand dollars had been subscribed at Penang for the Chinese Medical College up to the 5th instant.

The Penang Foundry Co. has secured the contract for the supply of iron and steel work for the Railway Terminus and Offices at Penang.

DOCKS

TANJONG PAGAR.—SINGAPORE, Dec. 20.—It is officially confirmed that the Secretary of State has informed the Directorate of the Tanjong Pagar Dock Co., Ltd., that the Government will take over their property on terms to be mutually arranged.

It is believed that the Government's proposal is in connection with a harbor scheme, naval docks and works.

The secret, however, is well kept.

The market price of the company's shares has gone up to \$270, buyers from London.

(The shares were quoted at \$235, sellers, on the 12th inst. The capital of the company consists of 37,000 shares at \$100 paid up, and debentures \$250,000 at 6 per cent and \$1,365,500 at 5 per cent.)

PUBLIC WORKS

SHANGHAI.—The French Municipal Council received tenders on Dec. 12th for the following contracts for the year 1905: Supply of coal to the various Municipal services, viz., about

(a) Electric Light Works: 1,500 tons, Karatz No. 1, to be delivered into the godowns of the said works, Quai du Yang-king-pang.

(b) Waterworks of the French Concession. 820 tons, Gotakee small Kingomi, 15 " Choice Karatz, 5 " Wollongong for Smithshop, to be delivered into the godowns of the said works, in Tonkadoo.

(c) French Municipal Slaughter House. 150 tons, Karatz No. 1, 3 " Charcoal, 5 " Fire-wood, to be delivered into the French Municipality's Abattoirs, Quai de Extension.

(d) Various Municipal Buildings (Offices, Police Stations, etc.) 200 tons, Choice Karatz, 20 " Hongay Anthracite, 20 " Smithshop's Coal, to be delivered at the various other Municipal buildings according to orders.

The whole to be delivered upon special application made according to the requirements of the interested Departments.

2nd.

Supply of road-macadamizing material for the French Concession, Extension, and French Municipal outside roads.

3rd.

Removal of night-soil from the French Concession and its extension.

SIAM PUBLIC WORKS.—The 1905 budget provides for the following expenditures of interest:

Sanitary Department. Under Contingencies the principal grants are, one of Tcs. 547,000, for the repair and up-keep of roads and canals in Bangkok (being an advance on last year of Tcs. 38,000), and another of Tcs. 270,000 for lighting, while for expenditure which is classified as extraordinary, the total grant is Tcs. 270,000, made up as follows:—Installations for lighting roads and public buildings, Tcs. 20,000; New installation for the Royal Palaces Tcs. 50,000; and grant for the construction of roads and drains, Tcs. 200,000. From these figures, and the fact that the total estimated cost of the Sanitary department for 1905 is over Tcs. 1,318,000, it will be evident that the Government spends a very considerable sum annually for the health and convenience of the inhabitants of the capital.

Posts and Telegraphs. The increase under this head is due to the fact that the extraordinary expenditure of the department, which last year was taken to the budget of the Central Bureau of the Ministry, has now been retransferred to the departmental estimates, so

as to show more clearly the actual cost of this branch of the service. The principal items so budgeted for this year are:—Tcs. 35,000 for the continuation of a telegraph line in Monthon Isan; Tcs. 52,000 for a line in Monthon Phayap; and Tcs. 22,000 for a storehouse for telegraph material in Bangkok.

Irrigation Department. The Irrigation budget this year provides for an expenditure of Tcs. 563,356, being an increase of Tcs. 524,116 over the nominal provision of Tcs. 39,240 made last year. This very large increase is due to the fact that the department has now been properly constituted, with a staff of seven expert European engineers, and that provision has been made for the commencement of operations on a large scale. The programme drawn out provides for an annual expenditure of about Tcs. 600,000 per annum for 5 years—the major portion of which will be devoted to the very necessary work of dredging out the existing canals, building locks where required, and putting the embankments and tow-paths in a proper state of repair. At the same time it is intended to take systematic observations of rainfall, slope of land, tidal influences, etc., in connection with the large scheme of irrigation tentatively proposed by the Director General of the department last year, and it is hoped that the collection of these data will have sufficiently advanced during the next three or four years to enable the details of the scheme to be accurately worked out by the time the present programme of work is completed. The total extraordinary expenditure of the department for the current year amounts to slightly over Tcs. 400,000, of which the main items are one of Tcs. 100,000 for two lock gates for the Saan Saap canal, and another of Tcs. 120,000 for purchase of dredgers.

PUBLIC WORKS, SIAM.—Besides the State Railways on the north, there are actually two other new lines under survey at present. One of these, the construction of which has been granted to a Company, has for its object the continuation of the Bangkok Tachin line up to the Meklong, a distance of about 35 kilometers of new railroad. A simple transfer from one terminus to another will be necessary at Tachin (Supan river).

The other line, now being surveyed, will have for starting point the local station of the Bangkok-Korat line, and its point of termination will be Patriew, on the river of Patriew. The projected length of this line is 64 kilometres. It will be seen that this differs from the old scheme, which included Bangkok,—Patriew,—Pachim,—Siakao,—Watana and Battambang. So that there is still ample scope for many works of the kind. It is pleasing to note that irrigation work, under the able direction of the distinguished and sympathetic Acting Director General M. J. van Tubergen, is rapidly progressing.

Many locks are already completed at Klong Toi, Klong Radja Damri, etc., and five other large sluices are now under construction at Bang Kanak, Klong Thaki, Sapatoom Klong Samrong, and at Bang Hia, respectively.

Preparatory works to the construction of locks at Chainat are already in progress. This place is about 40 kilometres to the south of Paknambo.

It is to be hoped that the energy and progress now displayed in these works will continue, as nothing is better calculated, than the promotion of such schemes, to bring about the rapid development of the country and turn its rich resources to profitable account.

PHRA PRATOM, SIAM.—A good sized hotel has been erected near the railway station at Phra Pratom, and it is expected it would be opened before the end of November. Enormous improvements have been effected in this go-ahead town, the only one in Siam with a water supply, and a number of new buildings, including a Monthon office and a gendarmerie station, are in course of erection. The rents from the market are said to amount to 4,000 ticals a month.

PUBLIC WORKS LOAN, SINGAPORE.—At a recent meeting of the Municipal Council it was unanimously carried that the Government be asked to sanction a loan of \$800,000 to be used as follows:

Stamford Road Canal, \$25,000; New Mains, \$60,000; Completing of Filters 11 and 12, \$10,000; Purchase of Worthington Pumps, \$82,000; Electric Power Installation, \$150,000; Raising Dam, \$30,000; New Cinerators, \$60,000; Mohamedan Cemetery, \$68,000; New Filters, \$100,000; New Markets and extensions, \$150,000; Tanjong Katong Roads, \$40,000; Cantonment Road, \$25,000; total, \$800,000.

MADRAS IMPROVEMENTS.—MADRAS, Nov. 19.—Sir A. T. Arundel arrived here from the Kolar Gold Fields this morning, after visiting the Cauvery Power Works at Sivasamudram and the connected head works at Kolar. He inspected them with the view of having a personal knowledge of the works, so that it may be useful when he comes to consider a number of similar works which are bound to come before the Government of India shortly, one such being the Perayar Electricity Distribution Scheme in this Presidency. As already telegraphed, Sir A. Arundel goes to Paumben to confer with Lieutenant Sinclair of the Marine Survey and the engineers concerned about the proposed ship canal. He then goes to Ootacamund to inspect the route of the railway extension to Ootacamund and the site of the Ooty railway terminus. He will take the opportunity of visiting the cordite factory and power works at Karteri, which are to be opened today by Sir Edmund Elles.—*Englishman.*

PENANG, S. S.—A special meeting of the Municipal Commissioners was recently held to consider the Budget for 1905 and Supplemental Budget No. 2 of 1904.

The estimated balance on 31st December was increased to \$90,000, thus making the total estimated revenue for 1905, \$888,588. Under the heading Town Water Supply, the items, Renewal of Mains, \$3,500; New Mains Laying, \$5,000; and Meters, \$3,000, were deleted, and a new item, Water Mains, \$13,500, was inserted. This latter was put in as the first installment towards the rearrangement of the system of mains in the town. Under Works and Buildings, the following items were inserted:

Expenses in connection with Trial Shafts (Water Supply), \$20,000; Alterations to Aier Etam Intake, \$2,000.

There was a long discussion about the \$20,000 for Trial Shafts. It was finally decided to insert the item on the understanding that in the first instance the only expenditure would be in respect of shafts for works required to be done by the Engineer in connection with his report on the Batu Feringhi scheme, and after his report thereon had been submitted, if it was found that any other investigations in connection with the Water Supply were necessary at the Waterfalls or elsewhere, special sanction for the carrying out of such works and the expenditure thereon should be obtained. Tenders for electric light installation and fans in the Municipal Offices and Jinriksha Office were submitted.

It was agreed to accept Messrs. Burn and Co.'s tender, on condition that they guaranteed to keep the installation and fittings in thorough working order for twelve months from the date of the Municipal Engineer's certificate of completion. Bills to the amount of \$31,863.01 on Tramways Account; \$381.14 on the Electric Lighting Account; and \$5,633.22 and \$5,988.00 on the Ordinary Account, were passed.

THIBET ROAD, INDIA.—The government of India contemplate an expenditure of 50 lakhs of rupees on the construction of a good permanent road from Darjeeling to Thibet.

TAIPING, F. M. S.—A "Foden" Motor Wagon is to be purchased by the Public Works Department, for use in Taiping, at a cost of \$8,000.

SIMLA IMPROVEMENTS.—SIMLA, OCT. 28.—The question of the improvement of Simla is now being actively taken in hand by the Punjab Government, and the widening of the Sanjauli tunnel and the road to Mashobra to 18 feet are already in hand. When these are concluded light-wheeled traffic will be permitted to Mashobra and extension of this road on the same width to Naldera will be carried out later on. In Simla itself it is understood that mule roads from Sanjauli to Kaithu Bazar, with a subway tunnel through the Ridge and a road from the main bazaar to Chota Simla bazar, will be taken in hand at once. Other road improvements have also been suggested and will be considered in due course. A lift to Annandale and a wire cable way from the Naldera Ridge to the Suttlej and the widening of the Hindustan-Tibet road into a cartroad as far as Fagu are among other projects which have been favorably considered. When the introduction of electricity and the funds permit, the housing in settlements of the clerical Subordinate Government Establishments of bazar coolies and the construction of a dhobies' ghat are matters which have not been lost sight of, but these cannot be dealt with until the question of the possible move of the Punjab Government to Dalhousie has been definitely settled.—*Englishman*.

CANTON IMPROVEMENTS, December 24.—A survey of the land on the right bank of the Canton river has been started. This is a very extensive survey, considering the fact that it will include all the foreign properties on that side of the river, from Fati creek to Collinson creek near Macao Fort—the historical old land mark of the back reach.

The new bunding line has just been laid out in the front and back reach—which will make Canton one of the finest harbors in the East after the bund is constructed.

The new survey will take in all the Canal and creeks on that side of the river for nearly three miles in length.

The Imperial Maritime Customs authorities of Canton, who are carrying out this work, have entrusted Messrs. Purnell & Paget, of Canton, with this survey. It will be remembered that this firm has also the extensive river bunding and reclamation, etc., for the Hamburg-Amerika Linie (Messrs. Siemssen & Co., Hongkong) well in hand, which makes the back reach look very busy indeed, with the new work of the Standard Oil Co. on the same side of the river, while the wharf at Messrs. Butterfield & Swire's new premises looks quite very busy with the large steamers alongside.

SELANGOR, F. M. S.—The Selangor programme of public works for next year includes the following:

Lights and beacons, Klang Straits....	\$118,000
Road to Ginting Simpah, Ulu Gombak (on an estimate of \$240,000).....	75,000
Special reconstruction of roads and streets.....	75,000
Renewing culverts.....	75,000
New Post Office (on an estimate of \$100,000).....	50,000
Sepang Road to 33rd mile, Seremban Railway Line.....	45,000
Electric lighting, Government quarters	40,000
Importation of Labor, P. W. D.....	30,000
Completion of Road from Reko to Bangi.....	28,000
Extension of Cattle Quarantine Sta- tion, Klang.....	26,000
New Roads, Kuala Lumpur.....	25,000
Improving and widening Pahang Road.....	25,000
Iron Bridge over Batang Kali.....	24,000
Permanent bridges and culverts, Klang	20,000

PUBLIC IMPROVEMENTS, SHANGHAI.—Yang-kingpang.—From a letter from the Secretary of the French Council it is noted that the decision to co-operate in erecting sluiceways for the creek has been reversed.

The proposals of the engineer for its immediate treatment will be submitted to the works committee with the estimates.

PERAK, F. M. S.—The public works programme for Perak in the coming year includes the following:

Irrigation Scheme, Krian, 6th vote..	\$300,000
Road from Bruas to Padang Lalang..	53,500
New Central School.....	50,500
Tanjong Tualang Road.....	42,000
New hospital at Tapah.....	40,000
Road Grit to Lawin.....	37,200
Road Sumpitan to Kuala Kenering..	37,200
Tapah Water Supply, 1st vote.....	35,000
Road Siputeh to Batu Gajah.....	32,000
Kuala Kangsar Water Supply, 1st vote	30,000
Cart Road Meru to Chemor.....	28,000
New Bridge, Pondok Tanjong.....	25,000

RAILWAY SUPPLIES, ETC.

JOHORE STATE RAILWAY, SUPPLY OF SLEEPERS.—Tenders were received at the office of the Federal Secretary, Kuala Lumpur, on the 31st December, 1904, for the supply of hard wood sleepers for the Johore State Railway.

The specifications stipulate that only hard wood timbers will be accepted, such as Mirabau, Chenghai and Penak, or other timbers of the best hard wood varieties.

The sleepers to be hewn or sawn from matured timber and free from shakes, cracks, loose knots, sapwood and other imperfections, and finished to the true dimensions of 6' 6" by 10" by 5"; all corners are to be truly squared and top and bottom faces are to be out of winding.

The contractor is to deposit \$500 cash security on signing contract, and twenty per cent will be retained on all payments, until satisfactory completion of contract.

Delivery to commence two months from the date of signing the contract, and to proceed at the rate per month of one tenth of the number of sleepers contracted for, and the sleepers are to be handed over properly stacked in stacks of one hundred each within the railway reserve at or about the following places and in the following approximate numbers:—

From Johore Bahru, End-O-Johore	
Bahru Station.....	70,000
From Gemas, End-O-Gemas River ...	23,000
11th Mile—Bullock Kesap or Muar River.....	11,000
16th Mile—Rantau Panjang or Seg- amat River.....	32,000

FEDERATED MALAY STATES RAILWAYS.—**STEEL PONTOON.**—Tenders were received on Dec. 15th for the delivery at Port Swettenham of one steel pontoon 43' by 11' 6" by 4' 7" deep of about 30 tons displacement suitable for carrying a dredger crane using a Bells Grab.

The following specifications were published: The hull to be composed of a steel skin double rivetted throughout, supported on steel angle frames of not more than 22' centres—Reverse frames of suitable section to be fitted to every alternate frame.

The frame to have rounded bilge and to be stiffened by floor plates carried well round post bilge.

A plate keel so as to allow of flush bottom to be used and a Keelson of suitable section to be fitted above floors the full length of the hull.

The deck beams are to be of suitable section and to have extra strong knees and where supporting crane to be provided with pillars rivetted on their upper ends to deck beams and on their lower ends to Keelson. Deck beams to have suitable camber and the hull to be well stayed at ends.

Teak or Chenghai decking and rubbing streaks to be fitted.

Tenderers are to provide their own designs and specifications based on the general particulars above stated or modification of same as to length, width and depth, and scantlings of material, to suit their own designs and specifications.

Detailed drawings are to be also supplied showing particularly the method of fixing crane, which will be used to lift a two ton load at a radius of 15 ft. and the pontoon must be so designed that the crane when loaded may be swung through a complete circle without materially affecting the stability of pontoon.

The pontoon is to be fitted with mooring peels and to be fitted out completely in every respect for the purposes for which it is required.

Scantlings to be in accordance with Lloyds or Board of Trade requirements and a full inventory of equipment to be supplied.

Sealed tenders endorsed Tender for "Steel Pontoon" to be addressed to the Federal Secretary, Federated Malay States, Kuala Lumpur, will be received up till noon of 15th December, 1904.

GERMAN LOCOMOTIVES FOR JAPAN.—Orders for 31 locomotives, which will be used upon the Japanese railways, have recently been placed with three large German firms. A Hanover firm is to construct 9, and is to receive \$9,662 for an engine and tender, and a Berlin firm is to construct 12 and to receive \$9,691 each. An English firm submitted an offer to construct these engines for \$9,756 each, but did not receive an order.

LOCOMOTIVES FOR JAPAN.—A contract has been closed by the Atlantic Equipment Company, 25 Broad street, for twelve locomotives of the Mogul type for prompt shipment to Japan. The order comes from the Kiushiu Railway Company, which is adding materially to its rolling stock for both passenger and freight traffic. A locomotive of the same type as those about to be shipped is among the exhibits of the Atlantic Equipment Company at the St. Louis Exposition. A grand prize has been awarded to the company for its exhibit at the Fair, which included locomotives, steam shovels, etc.

RAILWAY MATERIAL FOR JAPAN.—The Falls Hollow Staybolt Co. of Cuyahoga Falls, Ohio, will soon make a shipment of about thirty tons of their ten-foot hollow round bars to the Kiushiu Railway Co. of Japan. Other Japanese railroads, as well as the Japanese Government, will also receive consignments, orders having been placed after severe tests, in which the bars gave entire satisfaction.

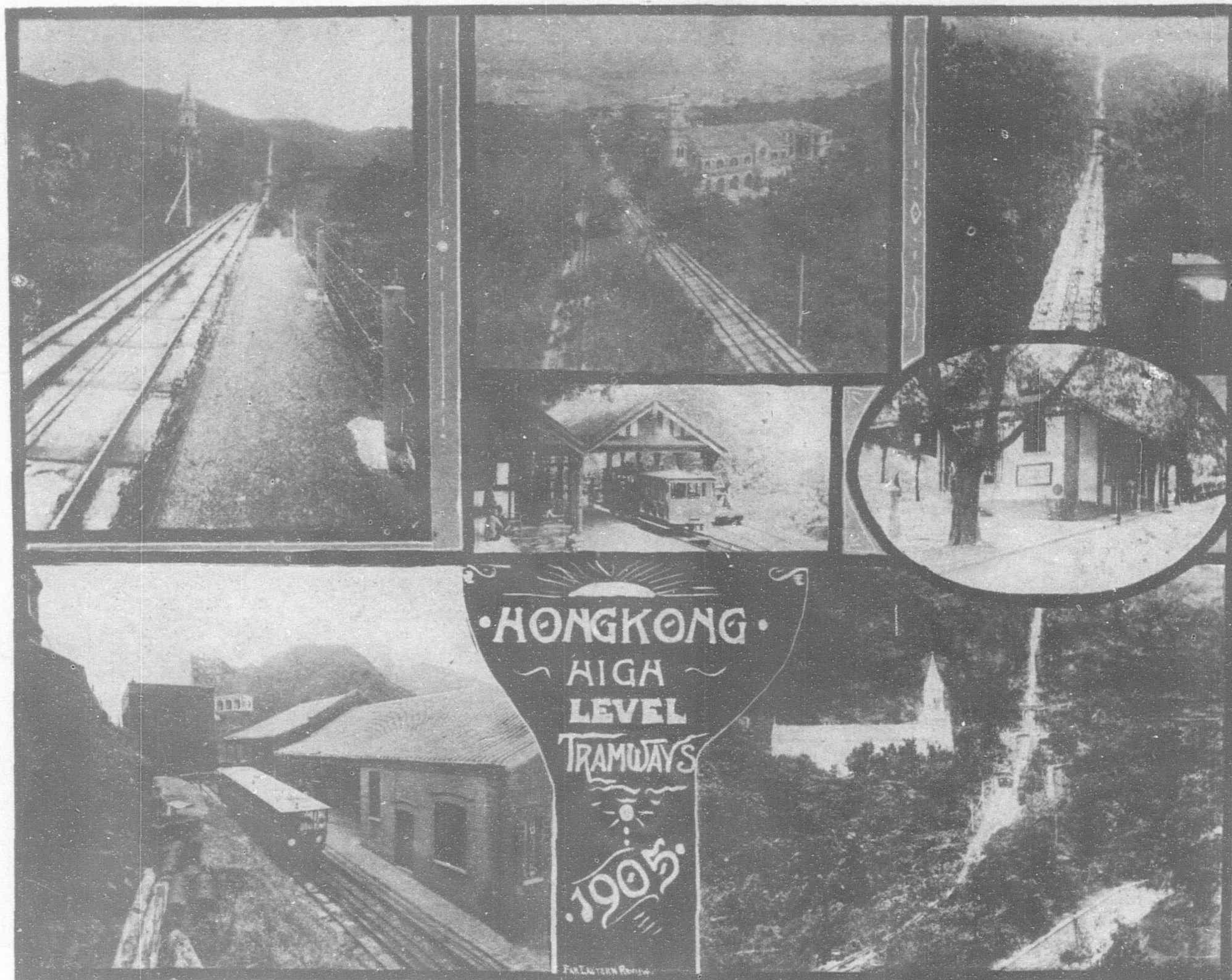
THE NORTH BORNEO TRADING COMPANY is doing a brisk business in sleepers just now, thereby giving employment to a considerable number of Chinese. The sleepers are of camphor wood, and are being shipped to Hongkong. Mr. Woodin is local manager in succession to Mr. Cosulich, who left for Europe some time ago, says the *North Borneo Herald*.

RAIL SHIPMENTS.—The United States Steel Products Export Company shipped during the last week of November 1,560 tons of rails to Melbourne, 1,100 tons to Auckland, 600 tons to Argentina, and 1,500 tons to England. Steel billets to the amount of 1,500 tons were shipped to Europe and 1,020 tons of bars to Japan.

INSPECTION CARS, JAPAN.—The Shanghai, agent of the Light Inspection Car Co., of Hagerstown, Ind., reports that the Japanese Government has decided to order a large number of their cars for immediate delivery at New York. Two of the cars have been in use during the war and have given entire satisfaction.

THE HANKAKU RAILWAY COMPANY (Osaka-Maizuru) has decided to open a steamship service between the ports on the coasts of Inaba and Hoki provinces by the steamships owned by the Hoki Steamship Company.

OIL FOR LABUAN.—A shipment of 2,060,000 gallons of refined petroleum and 5,145 gallons of lubricating oil was made last week from Philadelphia to Labuan, a British colony off the coast of Borneo. The value of the shipment was placed at \$207,000 and it is said to be the first full cargo of petroleum sent to that place. The tank steamer Schuykill took on the oil at the Point Breeze Oil Works.



HONGKONG HIGH LEVEL TRAMWAYS CO., LTD.

The twentieth ordinary general meeting of shareholders of this Company was recently held at the Company's registered office, Alexandra Buildings, Hongkong. There were present Messrs. Henry Humphreys (Chairman), J. A. Jupp, J. Orange, A. Moir, J. A. Tarrant, J. M. Wong, G. Murray Bain, W. H. Gaskell, C. Ewens, and the Hon. W. J. Gresson.

REPORT AND STATEMENT OF ACCOUNTS.

In moving the adoption of these the Chairman said:—Gentlemen—I propose, with your permission, to follow the usual course and take the report and statement of accounts as read. The traffic receipts for the twelve months ending 30th November, 1904, show an improvement of \$5,657.13 and the net profits for the same period an increase of \$4,924.25 as compared with the preceding year, a result which cannot but be gratifying to shareholders. The possibility, however, of a new Tramway being constructed to the Peak in the near future in direct competition with our own line compels us to husband our resources to the utmost. Your general managers and consulting committee have therefore considered it expedient notwithstanding the increased profits to reduce the dividend from \$20 to \$15 a share and to place the unusually large sum of \$20,000 to reserve fund. If this policy be pursued for another two years (about the earliest period in which any opposition line could be opened for traffic) this Company will have a reserve fund of about \$100,000, and with its small capital, and a reserve almost equal to its capital, will be in a very sound position, and strong enough to meet almost any contingency that may arise. It is to be hoped, however, that the Government will insist on the new Tramway having its Peak terminus at some spot other

than in the immediate vicinity of our own station at Victoria Gap. Another terminus there would confer no lasting benefit upon Peak residents, who could at most only hope for a temporary reduction of rates arising out of the competition between the two companies. The shareholders of both would suffer, and the Government and the Colony generally would not benefit at all. We are at present negotiating with the authorities for permission to extend our line to Queen's Road. If successful in obtaining their assent we shall be not only in a stronger position to meet the threatened opposition, but we shall be better able to cater for the wants of our season ticket holders and the public generally. At the same time, we are of opinion that the extension of the line to Queen's Road will prove remunerative, as there will be every likelihood of our receiving much greater support in the way of casual traffic. I have no further remarks to make, but if any shareholder has any questions to ask I shall be pleased to answer them.

Mr. G. Murray Bain, in seconding the motion, said:—I think the Chairman has covered all the ground, and mentioned pretty well all the points in the minds of shareholders at present. Perhaps the least said about these points in the meantime the better, and we shall find later on "how the cat jumps." The motion was carried unanimously.

ELECTION OF OFFICERS.

The Chairman moved that the Hon. W. J. Gresson and Messrs. J. Orange and Scott Harston be re-elected members of consulting committee for the ensuing year. Mr. J. A. Tarrant seconded the motion, which was carried.

Mr. J. Orange moved, and Mr. J. A. Jupp seconded, that Messrs. G. H. Potts and W. H. Gaskell be re-elected auditors. The motion was agreed to.

This concluded the business.

THE INTERNATIONAL COTTON MANUFACTURING COMPANY, LIMITED.

SHANGHAI

The following report was presented at the ninth annual meeting of the shareholders of the International Cotton Manufacturing Co. held at the company's office, No. 4 Kiukiang Road, on the 21st December, 1904.

Your directors have now to place before you the accounts of the company for the year ending the 30th September, 1904, which have been duly audited and show a net profit of Tls. 14,228.71. The war in the North combined with tightness of money and high cost of cotton have greatly interfered with the profitable working of the mill.

Debenture Trust Fund.—This fund (including accrued interest) now stands at Tls. 31,669.87, to which has to be added 25 per cent. of the year's profit, viz: Tls. 3,557.18, making in all Tls. 35,227.54, say 26 per cent. of the amount of debentures issued.

Your directors propose that the sum of Tls. 31,669.87, now standing at the credit of Debenture Sinking Fund, be transferred to Profit and Loss, making it Tls. 133,933.34, and that this be disposed of as follows:—

Write off Property Account for Depreciation	17,323.20
Write off Plant Account for Depreciation	52,543.24
Write off Furniture Account for Depreciation	437.61
Place to a Reserve Fund	50,000.00
Carry forward to New Account	13,629.29
	Tls. 133,933.34

Directors.—Mr. Scott retires by rotation but, being eligible, offers himself for re-election.

Auditors.—Your directors regret to have to record the death of Mr. R. F. Eastlack, who has been an auditor of the Company since its formation.

J. L. SCOTT, Chairman.

EWOT COTTON SPINNING AND WEAVING CO., LTD.

SHANGHAI

The ninth annual general meeting of the Ewo Cotton Spinning and Weaving Co., Ltd., was held on the 3rd inst., at the offices of the General Managers, No. 27 The Bund. There were present: Messrs. Henry Keswick (chairman), A. McLeod, P. F. Lavers and Zee Quayying (members of the consulting committee), Messrs. W. C. Murray, T. Kerfoot, B. A. Clarke, H. J. Clarke, J. Moosa, Yuen Chong, J. M. Young, and Jas. McKie (secretary).

The secretary read the notice convening the meeting.

The chairman said:—Gentlemen—The report and accounts were circulated to shareholders some 12 days ago and with your permission I will not detain you by repeating them, but regard their contents as read.

We have to report to you a very disappointing year, for whereas we made quite a satisfactory profit on the first six months' working, adverse circumstances which are referred to in the report resulted in the mill running at a loss during the latter part of the period under review. Our first reverse was the immediate result of the outbreak of hostilities between Russia and Japan which not only entirely stopped clearances of yarns already sold to northern outlets, but caused an accumulation of stocks, on all of which interest charges absorbed the working margins. Then, later in our financial year, we had as a result of famine prices prevailing for American cotton, an unusually strong demand for export, which resulted in the price of the locally grown staple touching a level that rendered it impossible to spin yarn at a profit.

In connection with the figures submitted to you it will be noticed that the balance at credit of working account is Tls. 71,137.30, which shrinks to practically nothing when deductions are made for the very heavy item of interest charges to which I have already referred and for the concurrent heavy insurance premia incurred for the same reason. The balance at credit of profit and loss accounts, Tls. 12,844.76, it is proposed to carry forward to current year.

The sum of Tls. 10,245.00 has been spent on renewals and repairs to machinery, and our mill manager submits a very satisfactory report under this heading; indeed, we are turning out as heavy a weight of yarn as the mill has ever recorded since its construction.

As regards the future I have pleasure in stating that the mill's production up to May, 1905, has been sold at a profit and we can only hope that we may be more successful in the latter part of next year than we have been in 1904.

With regard to the report of the meeting of a similar institution across the river some criticisms seemed to have been made and questions asked as to how, in view of the large business done in piece goods, there were not large clearances of yarn. This is because the yarn is for future delivery and the same explanation is applicable in our case.

There being no questions asked, the chairman moved the adoption of the report and accounts as published. Mr. McLeod seconded and the motion was carried.

Mr. B. A. Clarke proposed the re-election of the retiring consulting committee for the ensuing year. The motion was seconded by Mr. H. J. Clarke and carried.

Mr. W. C. Murray proposed that Mr. G. R. Wingrove be re-elected auditor of the company. Mr. Yuen Chong seconded and the motion was carried.

This concluded the business of the meeting.

THE TEBRAU PLANTING CO.

HONGKONG

Messrs J. D. Humphreys & Son forward us the following:—We are informed by the general managers of the Tebrau Planting Co., Ltd., that they are in receipt of advices from their manager, Mr. Larken, to the effect that the negotiations for the sale of the Company's property, which have been going on for some time, have been brought to a successful issue, and that the same has been sold for \$50,000 cash. The necessary meetings will shortly be held to wind up the Company.

THE PERAK SUGAR CULTIVATION CO., LTD.

SHANGHAI.

Report for the Nineteenth Annual General Meeting, held at the offices of the company, No. 22 Kiangse Road, on 19th December, 1904.

The Directors submit the following report for the twelve months ending 30th September, 1904:

Crop—Gula Estate.—The area under cane as stated in last year's report was 1,627.25 orlongs: of this, canes have been cropped from 1,542.75 orlongs, leaving 84.50 orlongs to be carried over to next crop. The output of sugar was piculs 56,072.93, giving an average of piculs 36.6 per orlong (1.6 tons per acre); the proportion of No. 1 sugar was 94.8 per cent, and the whole output realized an average net price of \$6.48 per picul.

Klompong Estate.—The area cropped has been 829.75 orlongs, producing piculs 33,468.30 of basket sugar, an average of piculs 40.33 per orlong. The average price realized for this sugar was \$3.33 net per picul.

Labor.—For the greater part of the season the supply of labor has been quite inadequate to the requirements of the estates, with the result that the cultivation has suffered from the want of sufficient attention, and it has been found impossible to extend the area under cane at Klompong to correspond with the capacity of the plant, which is capable of dealing with about 1,200 orlongs as against 877½ already planted for next season. The difficulty is one which has been experienced in a more or less degree by all the sugar estates, and is due chiefly to the extensive Government works in progress, and to the failure on the part of the Government to import sufficient coolies for these works, the Government contractors avoiding the initial expense by offering higher wages to time-expired coolies on the various estates. The Company has imported during the season 755 new coolies at a cost of \$33,000; 635 of these arrived on the estate during the last four months of the season, under two and three years' contracts, and a proportion of the cost of importation has therefore been carried forward as a charge on next year's account. The latest reports state that the supply of labor is now ample.

Rubber Plantation.—The reports with regard to this continue to be satisfactory. The manager expects to be able to start tapping—about 1,000 trees—next year. About 20,000 trees have been planted out and are doing well. About 15,000 will be ready for tapping in the year 1907.

Crop 1904-1905.—Gula Estate.—The area under cane for this crop is 1,393.73 orlongs, of which 622.50 orlongs are under lease to cane contractors. The whole output has been sold under forward contracts at prices which may be expected to realize an average of \$6.45 net per picul.

Klompong Estate.—The area under cane for this crop is 877.50 orlongs, of which 595.00 orlongs are leased to cane contractors. The whole output of basket sugar has been sold at \$4 per picul.

It is anticipated that the net results of the new season's working will be more favorable than those of the season under review.

Accounts.—Working Account for the season shows a profit of Tls. 33,462.29, which is transferred to Profit and Loss Account; the latter account, after deducting interest on debentures and the Manager's Commission of 2½ per cent on the Working Account profit, shows an available balance of Tls. 26,219.18, which the Directors propose to divide as follows:—

	Tls.
A Dividend to Shareholders of 5 per cent (Tls. 2.50 per share) ...	17,500 00
To write off Depreciation from Plant and Buildings—Klompong Estate ...	5,308.91
To write off Depreciation from Buildings—Gula Estate ...	1,775.18
Carrying forward ...	1,635.09
	<hr/>
	Tls. 26,219.18

GREEN ISLAND CEMENT COMPANY, LIMITED

HONGKONG

An extraordinary general meeting of the shareholders of Green Island Cement Company, Limited, was recently held at the Company's Offices in Hongkong.

The Hon. R. Shewan was in the chair and there were also present the Hon. W. J. Gresson, Sir C. P. Chater, C.M.G., Messrs. E. A. Hewett, G. Murray Bain, A. Babington, J. Orange, C. A. Tomes, Fung Wa Chuen and N. H. Rutherford, Secretary.

The Chairman proposed the confirmation of the following resolution, which was passed on November 26, last:—

That the Capital of the Company be increased from \$1,000,000 (divided into 100,000 shares of \$10 each) to \$1,500,000 (divided into 150,000 shares of \$10 each) by the creation of 50,000 new shares of \$10 each, to be offered and if accepted to be allotted to the persons constituting the Shareholders of the Company according to the Company's Register of Shareholders on the 28th day of February 1905, at a premium of \$10 for each and every single share of such 50,000 new shares in the ratio and proportion of one New Share for every Two Old Shares in the Company held by the respective shareholders thereof, the amount payable on each of such New Shares respectively (including the said premium of \$10 per share) to be paid as to one equal half part thereof on the 31st day of March, 1905, and as to the remainder thereof (including the balance of the said premium) on the 30th June, 1905.

Mr. Hewett seconded and the motion was carried.

That concluded the business of the meeting.

BANK OF ZAMBOANGA

Zamboanga is to have a bank, owned and controlled by local capital. In the beginning, the "Bank of Zamboanga" will not be a bank of deposit, as the promoters feel that they have all the capital which can be profitably employed in this city at this time.

The "Bank of Zamboanga" will do an exchange and loan business, make collections, buy and sell the products of the country, act as agents, etc. When the field is sufficiently encouraging the "Bank of Zamboanga" will be reorganized as one of deposit.

Arrangements are being pushed in order to open not later than March 1, 1905.

The building adjoining the office of the Mindanao Herald Publishing Co. has been secured, and bank furniture, fixtures, and a large burglar and fireproof safe ordered.

BANK OF PANGASINAN

The Bank of Pangasinan, with a paid up capital of -P-100,000, has been organized, with the following officers and directors: Captain Thomas Hardeman, President; Charles M. Colton, Cashier; Thomas Reed, Governor F. Favilla, Judge Arthur F. Odlin, and Señor M. Gonzales. The bank is located at Dagupan and with its strong directory promises to be an important factor in the financial affairs of that section of Luzon. The people of Dagupan are working earnestly with the Insular Government for an appropriation of about \$450,000 for the improvement of the port. Time was when the water there was deep enough to admit vessels of 500 tons burden, but the encroachment of earth brought down by the river has been playing havoc with the harbor, with the result that today trade by water is practically at a standstill. Several months ago engineers inspected the port. They reported the harbor could be reclaimed by the expenditure of the amount above stated. It is hoped the commissioners will give this much-needed improvement its early attention, because, with its consummation, Dagupan and the country for miles around will realize a great impetus in agriculture and trade.

STRAITS TRADING COMPANY

SINGAPORE

A general meeting of the Straits Trading Co. was held at 17 Collyer Quay, Singapore, on the 17th of December, when the following report for the half-year ending 30th September last was presented:—

Your Directors now submit the accounts for the half-year ended 30th September, 1904, being the first half of the business year 1904/1905.

After making full provision for bad and doubtful debts, the net profits amount to \$481,362.45, to which has to be added the balance, \$95,950.84, brought forward from last account, giving together a sum of \$577,313.29 for disposal on 30th September, 1904.

Your Directors recommend:—

1. That a dividend of \$1.00 and a bonus of 35 cents per share be paid to shareholders, absorbing \$337,500.

2. That \$50,000 be added to the Reserve Fund, which will then stand at \$750,000.

3. That \$50,000 be transferred to a Fund for equalizing dividends.

4. That \$40,000 be transferred to a Fund to provide for proposed contributory payments to ore producers in the F. M. S., such payments, if approved, to be made from such date and on such scale as the Directors may later on decide.

5. That \$15,000 be transferred to Employees' Bonus Account.

6. That the balance of \$84,813.29 be carried forward to a new Account.

The local market for tin opened on 1st April at \$79½ per picul and closed on 30th September at \$77½ per picul, the highest price in the interval being \$80½ and the lowest \$69½.

The business has again been a record one and while the Company's proportion of the total output from the F. M. S. continues to show a steady increase, it is also a satisfactory feature that the business from other countries is likewise steadily growing.

The Pulo Brani and Penang Works have improved in efficiency, and more economical results have been obtained. This, together with the prompt turnover which our ample smelting capacity ensures, enables us to pay liberal prices for ore and accounts for the increase in the business which your Directors hope will be maintained.

From the 1st November the F. M. S. Government raised the standard for payment of duty on tin ore from 68 per cent. to 70 per cent. recoverable metallic contents and as duty is levied on the full monetary value of refined tin the increased duty on the ore exported is equal to a taxation of over 72 per cent. recoverable metallic contents *ad-valorem*.

C. MCARTHUR, Managing Director.

INTERNATIONAL HARVESTER CO.

The International Harvester Co. has been extending its operations in the United States so that it now supplies not only harvesting machinery proper, but cultivators, grain drills and seeders, disc harrows, manure spreaders, and hay presses. A gasoline engine is also, it is said, manufactured by the company, and recently one of the largest plough-making concerns in the country was absorbed. In its 1905 contract the company binds all the dealers who accept its agency to handle its machinery exclusively in certain specified lines under penalties of \$50 for each husker and shredder, \$26 for each grain-binder, header, or corn-binder, \$10 for each mower, reaper, or stacker, and \$5 for each sweep rake, hay rake, or hay tedder of any other manufacture which any such agent sells or allows to be sold by any partner or employee. *The Implement Age*, one of the organs of the agricultural implement trade, has become alarmed at this development, and in its issue of October 6 begins a vigorous crusade against the company as at present conducting business. It "sounds the alarm" in a multi-headed, black-lettered article, the first of a series in which the methods and plans of the company are to be frankly and

vigorously discussed. The following sentences will indicate what the paper fears and what it finds:—"This great corporation has not been content with the vast business of five companies, which were consolidated, but seems to have entered upon a policy of aggression which, if successful, will engulf practically the iron implement industry of the world in one gigantic monopoly. Does any one who is at all well informed doubt that the International people have bought up D. M. Osborne & Co., Auburn, N. Y., Aultman & Miller Co., Akron, Ohio, and the Northwestern Grass Twine Harvester plant at St. Paul?" It may be added that the five concerns which united in 1902 to form the International Harvester Co. were the McCormick Harvesting Machine Co., the Deering Harvester Co., the Piano Mfg. Co. (Jones' binder), all of Chicago, Ill.; The Wardner, Bushnell & Glessner Co. (Champion binder), of Springfield, Ohio; and the Milwaukee Harvester Co., of Milwaukee, Wis.—*Ex.*

EASTERN EXTENSION AUSTRALASIA AND CHINA TELEGRAPH CO., LTD.

LONDON

The report of the Eastern Extension Australasia and China Telegraph Company, Limited, for the half-year ended June 30, states that the gross receipts amounted to £300,057, against £265,099, for the corresponding half-year of 1903. In the former figure is included interest on investments (£13,125), which in the corresponding period of 1903 was carried direct to the general reserve fund. The working expenses, including £25,712 for maintenance of cables, absorb £141,707, against £138,516 for the corresponding period of 1903, leaving a balance of £158,350. From this is deducted £2,923 for income tax, and £12,048, for interest on debenture stock, leaving £143,378 as net profit. After adding £41,890 brought forward there is an available balance of £185,269. The quarterly interim dividends of one-and-a-quarter per cent. each, amounting to £75,000, have been paid for the half-year, leaving a balance of £110,269 to be carried forward. During the half-year, a further partial renewal of the Hongkong-Foochow cable has been effected, and the cost, amounting to £6,273, charged against the general reserve fund. The subsidy arrangement in connection with the Tonquin cable expired in February last, and a new agreement has since been arranged, subject to parliamentary approval, by which the French Government will acquire the ownership of the cable.

OSAKA SHOSEN KAISHA

OSAKA, JAPAN

The Osaka Shosen Kaisha has estimated its net profits, from July to November last, at Yen 1,052,681, or an average of Yen 210,536 per month. The total receipts and profits for each of the five months are as follows:—

	Receipts.	Profits.
	Yen.	Yen.
July.....	674,239	170,981
August.....	738,209	190,487
September.....	753,384	203,007
October.....	880,035	248,631
November.....	820,719	239,575
Total.....	3,866,586	1,052,681

NIPPON KEROSENE OIL CO.

The *Chugai Shogyo* learns that the Nippon and Takarada Kerosene Oil Companies have arrived at an agreement concerning the establishment of a joint distributing mart at Kashiwazaki, Echigo province, with a capital of 500,000 yen, to be equally contributed by each party. Mr. Naito, of the Nippon Kerosene Oil Company, has been appointed chairman of the board of directors of the new institution, which will be opened on the 15th inst. Branches will also be established at Tokio, Osaka, Nagano, Shimono-seki, and other places.

NIPPON YUSEN KAISHA

TOKIO

At a general meeting of shareholders of the Nippon Yusen Kaisha, held at Tokio, the company declared a dividend at the rate of 10 per cent. and a special dividend of 2 per cent. per annum. The accounts for the half year ending with September last, which were adopted by the half-yearly meeting of shareholders, are as follows:—

	Yen
Net Profits	1,430,804.63
Brought from last accounts...	1,006,357.58
Total	2,437,162.21
To Reserve	71,540.23
" Bonuses	71,358.11
" Dividend	1,100,000.00
" Special Dividend	220,000.00
Carried to next accounts ...	974,263.87

P. AND O. S. N. CO.

LONDON

At the 64th Annual Meeting of the Peninsular and Oriental Steam Navigation Company, held on the 13th December, the Directors, after providing for the usual dividend at the rate of 5 per cent. per annum on the Preferred Stock, recommending a dividend on the Deferred Stock of 6½ per cent. for the six months, and a bonus of 3 per cent., making, with the Interim Dividend of 3½ per cent. paid in June, a total Distribution on the Deferred Stock of 13 per cent. for the year.

SHELL TRANSPORT CO., LTD.

LONDON

The "Shell" Transport Co., Ltd., have declared an Interim Dividend on account of 1904 of 1 (One) Shilling per Ordinary Share, payable on the 1st January, 1905. Holders of Warrants to Bearer will receive this dividend against Coupon No. 5, which may be negotiated through the Hongkong and Shanghai Banking Corporation.

WEI-HAI-WEI GOLD MINING CO., LTD.

SHANGHAI

A meeting of the above Company was recently held in the Chamber of Commerce Rooms, No. 1 Yuen Ming Yuen Road, to consider what course was to be taken to raise immediate funds to save the shutting down of the mine.

The meeting was called in consequence of the Bank having refused to allow the Company to draw overdrafts.

The following letter from Mr. R. J. Duff, the Company's technical advisor, was read to explain the prospects of the mine:—

THE DIRECTORS, WEI-HAI-WEI GOLD MINING COMPANY, LTD.

Gentlemen:—As considerable disappointment has been expressed at the apparently poor results yielded by the first month's crushing, I think it may be useful to offer some remarks.

The development of the mine at the lower levels, where we are finding ore of very good quality, was retarded by delay in completing the erection of the steam hoisting plant. Until a month ago, when a whim was put up, the only means of raising ore was by a windlass. For more than half the time since its erection the whim has been employed in raising water from the main shaft in order to prevent its rising above the 100 foot level and stopping work there. In consequence of unfortunate delays the boiler for the hoist did not reach the mine until nearly the end of October, therefore the hoist was not ready for work until the 24th November. Under these circumstances it will be readily understood that the only ore available for crushing was the ore on the dumps, which is practically surface ore and mostly

of poor quality. This explains to a great extent the disappointing result of the first crushing. But we have still to learn from the manager how he explains so low a percentage of gold. It is no doubt partly to be explained by the absorption of mercury (and gold) by the new copper plates, which amounted, according to Mr. Dawson's letter of the 7th, in which I concur, to 18 lbs. of mercury, containing probably at least 2.25 lbs. of gold. This process of absorption gradually disappears as the plates are used. Then there has been too much leakage as shown by the assays of the tailings. An improvement has been effected here. On the whole, I am of opinion that we did well for a first crushing, especially taking into consideration the class of ore treated.

As regards the prospects of the mine, I made a careful inspection of all the different workings before leaving, and am able to say that all the drifts at the 40 and 100 foot levels looked most encouraging. No man can look into the earth, and we can only be guided by what appearances point to. The strong out-croppings for so great a distance both north and south of the workings, amounting in all to about 3 miles; the character of the ore, containing as it does copper and galena sulphurites, the surest indication of a true fissure vein; and the improvement of the assays at the lower levels—all these indications confirm me in my opinion that this is a large and valuable property.

No mine is better equipped. The Mill is first-class, and the machinery has developed enough power to work 60 stamps. The monthly out-turn will certainly improve with the gradual development of the mine, and I have no hesitation in saying that we shall be paying expenses and showing a profit within three months.

My lowest estimate of the average out-turn to be expected is 5 dwts. per ton, and our expenses should be covered by 2 dwts.—leaving a profit of 3 dwts. Taking 80 tons a day, as we have only 20 stamps, and 300 days in the year, this represents a possible profit of \$72,000 gold—which can be nearly doubled with 40 stamps.

J. R. DUFF.

Mr. Marcus Woolfe, who occupied the chair, explained to the meeting that a certain sum was necessary to save the Company from being closed down, and called upon the shareholders to subscribe the necessary amount. After a considerable debate the amount called for was oversubscribed at the rate of twelve per cent on the property, the subscribers to get the first call.

MANILA BINDING TWINE

TREASURY DEPARTMENT HOLDS IT DUTIABLE
AT 45 PER CENT.

Washington, Nov. 17.—The Treasury Department in a letter to the Collector of Customs at Marquette, Mich., has announced the decision of the Department that Manila binding twine, so called, or commonly known as such, composed wholly or in part of Manila hemp, is properly dutiable at 45 per cent ad valorem under paragraph 347 of the tariff law prescribing this rate of duty for all manufactures not specially provided for of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or either of them, is the component material of chief value, and that such binding twine cannot be admitted free of duty under paragraph 491, providing for the free admission of all binding twines manufactured from New Zealand hemp, istle or Tampico fiber, sisal grass, or sunn, or a mixture of any two or more of them.

The letter revokes so much of the Treasury decisions of March 23 and 28, 1899, as authorize free entry under paragraph 491 on Manila binding twine, so called, composed in whole or in part of Manila, when imported from Canada or Mexico.

HONGKONG PUBLIC WORKS

PROGRESS IN 1904.

During the past year a great variety of undertakings intended to improve the amenities of the Colony have been started and completed. The list of the larger works carried out by the Department is a long one.

GOVERNMENT OFFICES AND BUILDINGS.

In the case of the Government Offices, the work of making the foundations will be finished in three or four months, when the building of the superstructure commences. The construction will be carried out with the utmost speed compatible with efficient and satisfactory workmanship. With regard to the Western Market and the Harbor Office, it is anticipated that a year must elapse before they will be in a state fit for occupation.

FIGHTING THE MOSQUITO.

During the year, a considerable number of nullahs have been drained. The amount spent upon this work already reaches the respectable sum of \$50,000. The Bacteriological Institute, which is being erected from the designs of Messrs. Leigh & Orange, one of the leading firms of architects in the Colony, is well on the way towards completion, and is likely to be out of the hands of the workmen in three or four months. The building will be an exceptionally complete structure so far as a bacteriological institute is concerned, and on a par with anything yet constructed. The new structure is in the Tai-pingshan area, and research work in malarial fevers, plague, etc., will be conducted there.

The water supply for the shipping has been improved by the construction of filtration works at Laichikok. Numerous small works have been carried out by the Department, notably the erection of a bathing establishment, at Pound Lane. Provision has been made for bathing by men and women in separate apartments. The baths are solidly built, and the inner walls are tiled with white sanitary tiles. An average of 800 persons daily make use of the baths, while those at Wanchai are patronized by a daily average of 1,200 persons. The baths are under the supervision of the Sanitary Department.

FOR THE RAINY SEASON.

The East Praya has been raised, in view of reclamation projects, so that there may be no trouble in that direction in the future. Gullies for storm water have been reconstructed in various parts of the city. New principles have been adopted in the construction of these gullies and at present the old gullies are being re-built at the rate of about 400 a year. In time the old-fashioned style of gully will be entirely replaced by those on the new system, whereupon the question of adding to those in use will come under the consideration of the Department.

RESUMPTION.

The Government have resumed possession of the Kau-u-fong property south of Queen's Road, near Aberdeen Street, and it is proposed to pull down the houses now standing there and reconstruct the whole area. The ground will be let out for new building sites, and with this object a 30-foot street will be laid traversing the area from end to end.

AT KOWLOON.

The Kowloon Waterworks are well advanced. The main dam is being built and the service reservoir, capable of holding 2,000,000 gallons, is already being utilized. The whole of the works are expected to be finished—unless any alteration in the original plans be adopted—within two years. The contract time is up at the end of next year, but as it was decided to raise the height of the dam in order that its storage capacity might be increased the contract period for completing the work had to be extended. The filter site is finished and the rest of the work is satisfactorily progressing.

TAITAM WATERWORKS.

Respecting the waterworks at Taitam the excavations for the new dam have been nearly finished, and engines are being erected. A consignment of the 18-inch pumping main is on the ground and the new road is

finished for about a third of the distance. The cost of the scheme is estimated at some \$800,000, and it is hoped that the works will be finished by the end of next year. The reservoir capacity is given at about 20,000,000 gallons. The Taitam works form the first section of the general waterworks scheme in that locality. In connection with the site for the new dam, the preliminary borings have been made, and bedrock struck, so that altogether the progress may be considered highly satisfactory in every way.

AT GREEN ISLAND.

The erection of a new Gunpowder Magazine at Green Island has been in hand for some five months, and the superstructure is going up. The contract is up in October next and unless something very uncommon occurs the building will be completed well within the required time.

A new disinfecting station with offices for the medical officer of health at Kowloon should be finished in a couple of months. A considerable part of the building is even now completed and in occupation. The erection of a school at Yaumati and quarters for officers at Taipo were begun during the year and although well advanced they will not be ready for use for some time yet.

MISCELLANEOUS IMPROVEMENTS.

As announced at the time a new 8-cord cable has been laid across the harbor. The old cable gave a great deal of trouble and was altogether unsatisfactory. The new cable is one of the heaviest in the East, and will do away with the constant interruptions which occurred during the lifetime of the previous line.

A new road at Kowloon, running from Hung-hom to Sixth Street, Yaumati, has been constructed during the year, and as stated a few days ago the reclamation scheme has been responsible for the construction of Middle Road.

PHILIPPINE HEMP INDUSTRY

(Continued from page 19.)

NOTE.—After abacá is 3 years old it requires practically no further cultivation. It will produce a full crop without replanting for a period of from ten to fifteen years.

PROSPECTS OF THE ABACA INDUSTRY IN THE PHILIPPINE ISLANDS.

The future development of the abacá industry will depend chiefly on the position which this fiber continues to hold in the industrial world. There is every indication that the rapid growth of shipping, the more extensive use of binder twine, the successful application of manila rope as a transmission power, together with other minor uses, will create an increasing demand for abacá that will equal any increase in production. The superior qualities and intrinsic value of abacá are thoroughly well known in all parts of the world. Its only dangerous competitor at the present time is sisal, which is an inferior fiber.

The opportunities for the extension of the industry are almost unlimited. Improved methods of cultivation will largely increase the production on land already planted, while enormous areas now covered with forest are in every way suitable for abacá. The introduction of fiber-extracting machinery should result not only in a large increase in the quantity of fiber produced, but also in a decided improvement in quality.

CONCLUSION.

The abacá plantation of the past has been, in general, conducted in anything but a businesslike manner. Antiquated methods, careless management, and waste have been the rule rather than the exception. The planter of the future who, with carefully selected land, good management, and the intelligent use of modern methods and machinery, aims at the production of a superior fiber at a minimum of cost, has every prospect of ultimate success. With no danger from insects or plant diseases, and but little from unfavorable climatic conditions, abacá is eminently a safe crop. With the present prices and the practically assured future demand it is one of the most profitable branches of agriculture for the Philippine planter.

INSULAR PURCHASING AGENT

FROM REPORT OF GOVERNOR LUKE E. WRIGHT, 1904.

"The volume of business handled by this office has steadily grown from the beginning, and the theory upon which it was created has been shown by actual experience to be of practical benefit in enabling the various bureaus and offices of the Government to buy their goods or supplies in an economical way. The duties which devolve upon the Insular Purchasing Agent are quite analogous to those of the head of a large department store in the United States. Whilst at first the methods of operating the agency were more or less crude, owing to the difficulty of obtaining employees with the proper training, and the further and more serious difficulty in purchasing the needed goods and supplies in the archipelago and the consequent necessity of ordering them from the United States and other countries—experience has in my judgment demonstrated the value of this agency and vindicated its creation.

"The total sales of the office for the fiscal year 1902 amounted to P1,970,549.78, and for the fiscal year 1903 to P2,134,141.98, an increase of 59.5%. For the fiscal year 1904 the sales amounted to P5,309,474.37, an increase over 1903 of 69.41%. The Commission has been compelled to make very considerable appropriations from time to time as a working capital for this institution. As the salaries and wages of the officers and employees of the bureau are paid out of general appropriations and the 10% charged above the cost of goods and supplies is more than sufficient to meet any expenses incident to delivery to purchasers, a considerable sum is being realized in the way of profit from this source. The financial condition of the Insular Purchasing Agent is shown by the following statement:

ASSETS.	Phil. Cy.
Merchandise (Stock).....	P1,663,175.67
Accounts Receivable.....	579,725.04
Vouchers with Auditor for collection.....	151,023.85
Money and property with purchasing and disbursing agents in United States.....	212,225.66
Cash to credit of Appropriation.....	23,233.92
Cash in bank.....	11,384.55
Total.....	P2,610,773.69
LIABILITIES.	Phil. Cy.
Appropriations.....	P1,500,000.00
Net earnings under Act No. 231....	709,293.25
Accounts Payable (audited).....	110,963.45
Additional Accounts Payable, Unsettled Claims, etc., audited (estimated).....	100,000.00
Total.....	P2,420,256.70
Surplus.....	P190,546.99

"It is believed that, with the increase in the size and variety of the stocks of goods kept by Manila merchants in their stores, the Insular Purchasing Agent may gradually reduce his stock of merchandise, as he can then readily obtain necessary articles from private sources when needed. In order to induce merchants in the archipelago to increase their stocks, something over a year ago a conference was held by the Civil Governor with the leading merchants of Manila, and it was agreed that the Insular Purchasing Agent should as far as practicable buy all supplies purchased by him in Manila and that the merchants would sell supplies at a profit of 10 per cent above the cost of importation, this to include freight, insurance, lighterage, etc. Therefore a very large proportion of the goods purchased by the Insular Purchasing Agent has been bought in the United States through the Bureau of Insular Affairs of the War Department, an office and agency for that purpose having been established in New York City. This was a source of frequent and bitter complaints on the part of Manila merchants, who insisted, with considerable show of reason it seemed, that as they

were residents and taxpayers of the Islands from whom the Government drew a large portion of its revenues, it ought not to expend the very revenues thus derived from them in making purchases in the United States, and that if the Government would give them the benefit of its trade they would be enabled to carry much larger and more varied stocks of goods. Aside from this consideration, it was believed that trading wherever possible with Manila merchants would have a tendency, by increasing the volume of their business, to create an active competition among them and thereby lower prices generally to all their customers, and as a consequence to add to the general prosperity of the country. It was further considered that the increased cost of not exceeding 10% would be to a considerable extent, if not entirely, offset by the fact that deliveries of all goods purchased would be made in Manila instead of in New York or some foreign city, and that losses from breakage, from tardiness in delivery, and from other causes, and disputes relating thereto, would be eliminated. In consequence of this agreement largely increased purchases were made during the fiscal year 1904 from local merchants, naturally to their satisfaction, and, it may be added, to the equal dissatisfaction of New York and other merchants who lost the sale of these goods. The Insular Purchasing Agent states in his annual report that the effect of this change of program in the matter of purchasing goods has not been generally to increase the amount of stocks carried in Manila, except in a few lines. He states that the bulk of all the contracts awarded were given to agents and brokers who carried no stocks, or to the old English firms, who are willing to do business on a smaller margin of profit than Americans can afford, as the latter, as a rule, have little capital and therefore have to make larger profit. He states that in his opinion there should be some discrimination in favor of merchants who actually carry stocks of goods as against agents and brokers, in the matter of staple articles, because, as he says, the broker is satisfied with 5% and in many cases 2½% profit, and can deliver as quickly as the regular merchant, unless the article is in stock. He says also that when it is considered that the purchase of supplies by the bureau amount to more than four million pesos per annum, it can be seen at once that the Manila merchant cannot meet his various demands from stock on hand, nor are they justified in very materially increasing their stock if they must be forced into competition with brokers and agents. He points out further that the great need of the Islands is reliable wholesale merchants with capital and stock sufficient to carry on a large business. Conceding the correctness of his statements, I am unable to concur in the soundness of his view that discrimination should be made in favor of merchants who have stocks of goods on hand. In the first place, such a course would inevitably cause criticism and charges of favoritism, and besides, would increase the cost of goods to the government. It should not be overlooked, moreover, that the merchant with stock on hand and the broker are competitors, and that the policy suggested would have a tendency generally to raise the range of prices. It will be seen that it is not undesirable in the absence of, or, perhaps, even with large wholesale merchants on the ground, to have a number of brokers, representing wholesale merchants or manufacturers in the United States or elsewhere, to compete for the business. Not only do they perform a most useful function, but also they are residents and taxpayers of the Islands and swell the general volume of business. Moreover, the tendency of successful brokers is gradually to keep certain lines of goods on hand. The Insular Purchasing Agent must necessarily for a long time to come buy large quantities of goods in the United States which cannot be obtained here. During the year 1904 his purchases in the United States amounted to \$931,250.36. These purchases were made through the Bureau of Insular Affairs at Washington. For this reason it will be necessary to have a purchasing

agent for several years to come in the United States, and through him and other sources the Insular Purchasing Agent will be enabled to keep posted as to prices, and always be in a position, if goods cannot be obtained as cheaply here as in the United States, to buy his goods in that market."

INSULAR ITEMS

COAL FOR CAVITE.—Bids were opened at the Navy Department on Nov. 15th for transporting 25,000 tons of coal from the Atlantic coast to the naval coal depot at Cavite. The law provides that the coal shall be shipped in American bottoms unless a fair proposal cannot be secured; when the Secretary may in his discretion award the contract to the lowest bidder. The bids ranged from \$4.19 to \$7.90 per ton and included bids from American and foreign ships. The bids from foreign ships were many of them lower than from American ships, with one exception, where the bids from foreign and American steamers were the same. No award has been made.

BIDS OPENED FOR CEMENT, MANILA.—On December 31st, at 10 o'clock a. m., Mr. Beardsley, chief consulting engineer to the Civil Commission, opened the bids for supplying 30,000 barrels of cement for the completion of the Cebu harbor works. This is one of the most keenly sought after contracts which has been available for many months, the total amount involved approximating some P150,000.00. The bids were opened in presence of the bidders, and the decision of the government will be announced in about ten days. The following bids were opened:

BIDDER	BRAND	PRICE IN GOLD
Mariano Uy Chaco—Alsen—		2.57.
Holliday, Wise & Co.—Paloma—		2.49
H. W. Peabody & Co.—Atlas (a)—		2.87.
W. H. Anderson & Co. Green Island—		2.29½.
	Emerald.	
Behn, Meyer & Co.—Aenmoor—		2.50.
	Brydenberg—	2.53.
	Saturno—	2.40.
J. G. White & Co.—Germania—		2.60.
Froehlich & Kuttner—Saturno—		2.69¾.
Mitsui Bussan Kaisha—Oneda—		2.49.
Alsation Cement Co.—		2.27.

AUTOMOBILE SPRINKLERS, MANILA.—The city has just received three new sprinkling wagons from the United States. One of these is equipped with a gasoline engine and will be sent to the Santa Ana and Pandacan district, on account of the necessity of loading water at the esteros, the supply furnished by the city pumps not being adequate for the needs of the residents of these districts.

IBA-O'DONNELL ROAD, ZAMBALES.—Superintendent Thurber of the Iba-O'Donnell-Capiz road in Zambales province, says that work on the new road is progressing at a most satisfactory rate and should be finished by the last of next March. The road will furnish an outlet that has been needed for years.

FORT WILLIAM MCKINLEY BOARD.—General Corbin has dissolved the old board of officers appointed by General Wade to superintend the construction of Fort William McKinley, and has appointed the following: Colonel Maus, Colonel Knight, Major Bannister, Major Taylor, Captain Horton, and Lieutenant Poole.

Captain Horton, who will be the quartermaster in charge of construction, will have as assistants, Captain Farnsworth, of the 7th Infantry, and Lieutenant Poole and Lieutenant Jackson, of the Engineer corps.

In the near future 12,000 men are expected to be employed there, of whom probably 100 will be Americans, the rest being Japs, Chinamen, and any one who can do the work. Carpenters are needed now, there being probably ninety houses to build. Road-machinery has arrived, and the work is going to be advanced as rapidly as possible.

NEW BUILDING SCHEME, MANILA.—A recent session of the Commission was taken up with a discussion of the needs and requirements of the military branch of the service, in connection with the general improvement of the city.

The discussion was principally along the lines of what portion of the new harbor and docks are to be set aside for the quartermaster's department and transport service. There was nothing absolutely decided upon, but a general idea was arrived at, which will come up for legislation at a later date.

The subject of the disposition of Camp Wallace field was brought forth, and it was decided to turn same over to the city and under the control of the municipal board.

When the military wish to use the ground for drilling troops, an application to the municipal board will be made, and, nothing else preventing, a permit granted.

Architect Burnham's scheme for the field embodies an alteration, and it will only be a few years until it is made into a park, with the government building as the main piece of architecture.

FILLING THE MOATS, MANILA.—The session of the Commission, on Jan 5th, was devoted to a discussion on the subject of filling up the moats surrounding the walls of the old city of Manila.

The members of the municipal board, the chairman of the committee on public works, the city engineer, Architect Burnham, Major Townsend, and the Atlantic Gulf and Pacific Co., contractors, had been invited to be present.

The discussion was along lines as to the best and most economical way for filling in of both the inner and outer moats. No definite decision was arrived at. Governor General Wright requested Major Townsend to confer with the municipal authorities, Architect Burnham and the contractors giving him aid and advice.

The task is soon to be commenced, as the big dredger out in the harbor will soon be pumping up more sand than the reclaimed portion can stand and there will have to be some place arranged for the surplus.

NEW ELECTRIC FIRM, MANILA.—A new firm, composed of Messrs. H. B. Atwell, V. D. Gordon, and J. Sliez, will soon open an electrical repair shop at Nos. 76 and 78 Calle Elcano, corner San Fernando, San Nicolas. They will cater to the electrical repair trade exclusively. Large orders for repair materials have been placed with several firms in both the States and Hongkong, a part of which will arrive within the next few days. These gentlemen have had a wide experience in this particular line, both here and in the United States.

DREDGING BINONDO CANAL, MANILA.—The Philippine Commission have passed a resolution appropriating \$10,000 for the dredging of the Binondo canal to the old Oriente building, so that large cascos can be used to deliver goods to the Constabulary warehouses direct from the ship's side.

The dredging of the Binondo canal by the harbor improvement company was suspended some time ago when it was made navigable to the General Blanco bridge. Most of the large warehouses are situated along the canal up to this point, and it was not thought advisable to continue the work, since the benefits derived by the commercial interests would not be material beyond this section.

The Constabulary, however, thought otherwise, and Colonel Baker submitted rows of figures so computed that the expense of hauling the supplies for the insular soldier from the docks to the warehouse in one year amounted to more than the actual cost of dredging the remainder of the canal leading to Constabulary headquarters.

This report, with the request for an appropriation, put matters in a new light, and Governor General Wright presented the resolution which authorized the renewal of the work to the expenditure of ten thousand. It promptly became law in the work will commence immediately.

THE COMMERCIAL MUSEUM OF THE PHILIPPINES

ORGANIZATION AND OBJECT.—The Commercial Museum of the Philippines is a branch of the Philippine Museum of Ethnology, Natural History, and Commerce, established October 29, 1901, by Act No. 284 of the United States Philippine Commission.

The object of the commercial branch of the Museum is to encourage the intelligent and profitable development of the resources of the Philippine Islands, and to aid in the extension of our domestic and foreign trade relations. This will be attained by the collection and exhibition of commercial products and the collection and dissemination of commercial data. The work of the Museum will be classified under the following departments:

DEPARTMENT OF EXHIBITS

EXHIBITS OF NATIVE PRODUCTS.—The Museum will collect and exhibit, both in the crude and manufactured form, the commercial products of the Islands.

EXHIBITS OF IMPORTS.—For the convenience of local importers and foreign exporters, the Museum will procure an extensive and well-selected exhibit of articles imported from foreign countries.

EXHIBITS ABROAD.—In order to increase the demand for Philippine products in foreign countries, the Museum will place exhibits of our native products in the best markets of the Orient, the United States, and Europe.

DEPARTMENT OF INFORMATION

CONCERNING THE PHILIPPINES.—The Museum will make the fullest possible collection of data bearing on the resources and the commercial and industrial opportunities of the Islands. The public is invited to examine the data on these subjects on file in the Museum.

CONCERNING FOREIGN COUNTRIES.—A systematic study will also be made of foreign markets to discover the best markets for both our exporters of native products and for our importers of foreign products.

SOURCES OF INFORMATION.—By means of trade journals, trade catalogues, consular reports, correspondence with other commercial museums and chambers of commerce, and by personal investigation, the Museum will keep fully abreast of the latest movements, prospects, and thought in the commercial world.

PATRONS.—Producers, manufacturers, merchants, exporters, and importers are invited to cooperate with the Museum in the collection of these exhibits and data and invited to avail themselves of the benefits to be derived therefrom. Confidential information given to the Museum will not be divulged to the detriment of the party giving it. The exhibits and information in possession of the Museum will be used in every legitimate way for the benefit of our patrons. The Museum makes no charges for any of its services.

POINTS TO EXHIBITORS

Exporters of other countries, local producers of raw material, manufacturers, and importers may place exhibits in the Museum free of charge. The exhibitor, however, is required to prepay all freight on his exhibit to Manila. The best way of sending small exhibits (weighing less than four pounds) is by registered mail.

Residents of the Philippines can usually ship their exhibits free of charge on the United States Army transports.

On their arrival in Manila exhibits will be placed in the Museum free of charge. When an exhibit is installed we call the attention of importers and dealers who are interested in that particular line of goods to the exhibit. Goods are displayed to the best advantage, their uses are explained, and, as far as practicable, tests are allowed to be made. The Museum, however, makes no sales for anyone, but it gives special attention to securing reliable firms in Manila and other towns of the Islands to represent each exhibitor.

Catalogues, in both English and Spanish should accompany the exhibits. Prices and discounts should always be given. Confidential discount lists may be sent to the Museum. Cable address and codes used should be given in the catalogues.

Address all communications and articles for exhibit to the Commercial Museum, Manila, P. I. Shipping mark: CMP, Manila, P. I.

Office of Constructing Quartermaster, New Post of Manila.—Manila, P. I., November 30, 1904.—Sealed proposals in triplicate for furnishing all labor and portion of material, for constructing 58 frame buildings at this post will be received here until 10 a. m. December 31st, 1904, and then opened. Information furnished on application. Envelopes containing proposals should be endorsed "Proposals for Construction" and addressed: M. C. Martin, Deputy Quartermaster General, U. S. A.

Office of the Insular Purchasing Agent.—Manila, P. I., December 19, 1904.—NOTICE:—Sealed Proposals, in triplicate, subject to the usual conditions, will be received in this Office until 11 a. m., December 28, 1904, at which time and place they will be opened in the presence of attending bidders, for furnishing, and delivery of 20 each of Nos. 1, 2 and 3, Hall's Sates. C. P. 176.

Blanks and specification can be had at this office.

E. G. SHIELDS,

Insular Purchasing Agent.

To Contractors.—Office of the Bureau of Architecture and Construction of Public Buildings, 158 Calle Anloague, Manila, P. I., December 13, 1904. Sealed proposals addressed to the undersigned and plainly marked "Proposals for Job No. 826," will be received at this office and at the office of the Provincial Supervisor, Cebu, Cebu, P. I., until 10:00 A. M. January 3rd, 1905, for furnishing all material and doing all labor required to fully complete the erection of Buildings, Dock and Gangway, Water Tanks and Tower, Windmill and Piping for the Quarantine Station, Caut Island, Cebu, P. I., in the manner and on the conditions set forth in the form of proposal and the specifications, copies of which with other information may be obtained upon application to this office or to the office of Provincial Supervisor at Cebu, Cebu, P. I. The right is reserved to reject any or all bids and waive any defects. Edgar K. Bourne, Chief of Bureau.

Improvements in Benguet Province.—Kias, Benguet, P. I., Dec. 28th, 1904.—Bids will be opened at 10:00 o'clock A. M. Saturday, January 14th, 1905, for the hauling of supplies for the Benguet Improvement, during the six months ending June 30th, 1905, from Dagupan to Twin Peaks, Camp No 4, or Baguio as may be elected by the Officer in Charge.

Bond will be required for the safe delivery of supplies at the points mentioned.

The right is reserved to reject any or all bids. For further particulars apply to Agent, Benguet Improvements, 35 Isaac Peral, Manila, P. I.

L. W. V. KENNON,

Major, 10th U. S. Infantry,
In Charge.

Manila, December 24, 1904.—Sealed proposals subject to the usual conditions will be received at the office of the Chief Supply Officer, Philippines Constabulary, until ten o'clock, a. m., January 5, 1905, for furnishing the Constabulary with two hundred thousand pounds of rice No 2.

Blank forms, with instructions, may be had upon application at said office.

The right is reserved to accept or reject any or all bids, or any part thereof.

H. B. HARPOLD,

Acting Assistant Chief Supply Officer.

Office of the Insular Purchasing Agent.—Manila, P. I., December 27, 1904.—NOTICE:—Sealed Proposals, in triplicate, subject to the usual conditions, will be received at this Office until 11 A. M. January 12, 1905, at which time and place they will be opened in the presence of attending bidders, for furnishing and delivery of 300 Cords Fire Wood at Bilibid Prison, C. P. 177.

Blanks and specifications can be had at this office.

E. G. SHIELDS,

Insular Purchasing Agent.

To Contractors.—Office of the Bureau of Architecture and Construction of Public Buildings, 158 Calle Anloague, Manila, P. I., Dec. 9, 1904. Sealed proposals addressed to the undersigned and plainly marked "Proposal for Job No. 550," will be received at this office until 10:00 A. M., Dec. 20th, 1904, for furnishing all material and doing all labor required to fully complete the construction of a new Roof on the Intendencia Building, Manila, P. I., in the manner and conditions set forth in the form of proposal and the specifications, copies of which with other information may be obtained upon application to this Office. The right is reserved to reject any or all bids and waive any defects.—Edgar K. Bourne, Chief of Bureau.

THE PARAFFINE PAINT COMPANY

P. & B. READY ROOFING

The climate of the Pacific coast is probably more severe on roofs and roofing materials than that of any other section of the United States. Shingles warp and curl. Slates grow hard and brittle, flake off and blow away. Tin sweats and rapidly rusts out. Corrugated iron expands and contracts with changes of temperature, till it is useless as protection against the elements. Coal tar runs and clogs the drain pipes and gutters in summer, and cracks and opens up in the cold of winter. It was to meet and overcome these difficulties and to furnish a perfect roof that *P. & B. Ready Roofing* was invented.

Since 1884 this roofing has been practically tested and found unequalled as a roof protection in the multitude of climatic conditions present in the frozen regions of the North, in the torrid countries of the South, and in those places more happily situated between the extremes. So successful has it proven that factories for its production have had to be established in the East and in Europe to supply the world-wide demand.

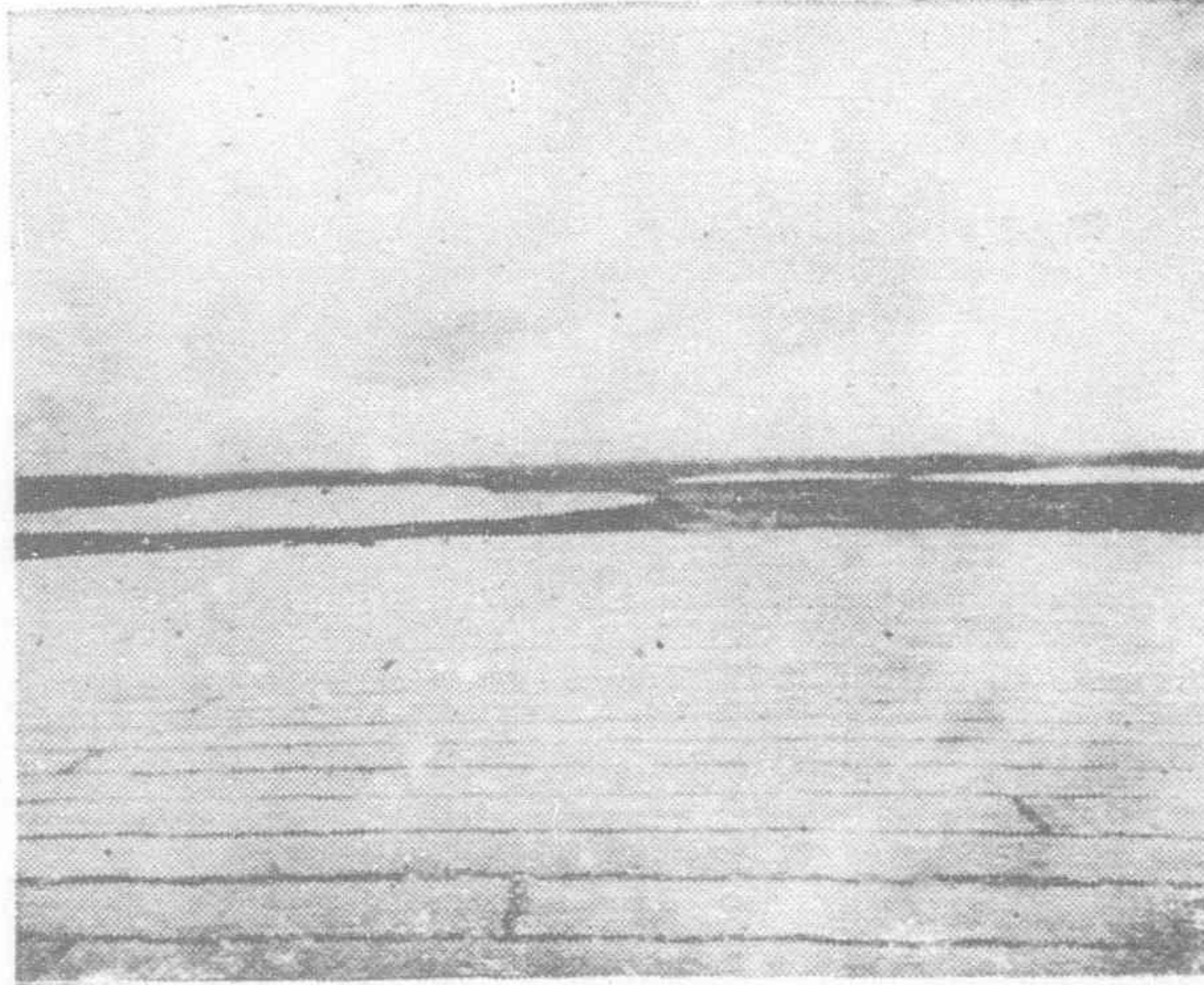
As its name indicates, the roofing is ready for immediate use, and requires neither skill nor experience to make it a satisfactory covering for all classes of buildings, from the temporary wooden shed to the permanent brick or stone building. *It is not a Paper or Felt Roofing*, but a strong, closely woven jute canvas thoroughly saturated and coated with *P. & B. Compound* and lined with heavy waterproof felt. It is ten times stronger than any paper, felt, or other ready roofing. It cannot be torn. It is absolutely odorless, a quality which no other prepared roofing possesses, and one which recommends it to all who save rainwater in cisterns for domestic purposes. It is fire-resisting and fire will not run on it, nor can it be ignited by sparks or brands of fire falling upon it. Insurance companies assume the same risk on buildings covered with this *Roofing* as with tin and slate.

It is not affected injuriously in the least by steams, gases, smoke, acids, alkalies, heat, or dampness; neither will it scale, sun-crack, nor run in the intense heat of the sun. Extreme cold does not injure it, and snow will not remain on sloping roofs covered with *P. & B. Ready Roofing*. It is a non-conductor, and as such renders a house cooler in summer and warmer in winter than any other class of roofing. This latter quality has made it invaluable for refrigerating and cold-storage warehouses, cars, and ships.

For temporary buildings its lightness, compactness and durability commend it to settlers, miners, lumbermen, stockmen, and others. For a small sum a strong storm and waterproof building can be erected, which, without tearing or breaking, can be used again at a distance. The cheapest kind of a foundation and frame work will answer as well as the best. The rolls are 32 inches wide, and contain sufficient material to cover two hundred square feet. The weight per hundred square feet is about 45 or 60 pounds, according to grade.

The Largest Building on the Pacific coast—The Pacific Mail Dock, San Francisco, containing over 140,000 square feet of roof surface—is roofed with *P. & B. Roofing*, light grade, laid over old shingles. The roofing was laid six years ago, and, though it has been exposed to unusual wear and abuse, is still in good condition. The dock superintendent stated that it paid for itself in the first winter in the saving of damage charges usually consequent on rains.

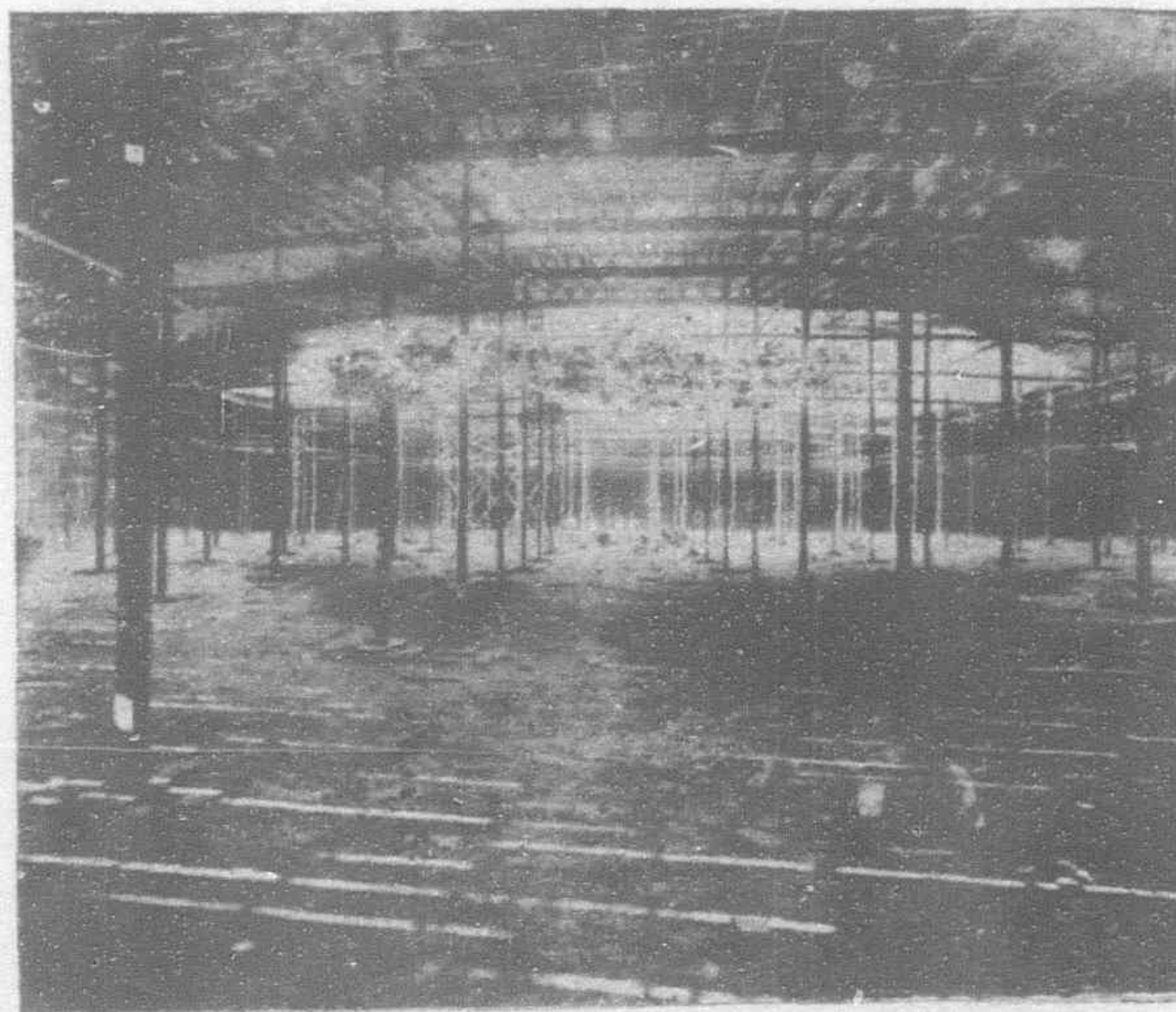
The rapidity with which P. & B. Roofing can be laid was shown in the roofing of the factory of the Eagle Automatic Can Company, San Francisco. The roof surface of this building contained over 50,000 square feet. It was covered with *P. & B. Roofing* and all roof work completed in less than five days.



P. & B. READY ROOFING ON CRUDE OIL STORAGE TANKS IN THE KERN RIVER OIL DISTRICT, CALIFORNIA. TANKS OWNED BY STANDARD OIL CO.



P. & B. READY ROOFING ON CRUDE OIL STORAGE TANKS IN THE KERN RIVER OIL DISTRICT, CALIFORNIA. TANKS OWNED BY STANDARD OIL CO.



FRAMEWORK FOR ROOF OF CRUDE OIL RESERVOIR, SHOWING INTERIOR. ERECTED BY THE STANDARD OIL CO. IN THE KERN RIVER OIL DISTRICT, CALIFORNIA. ROOFED WITH P. & B. MALTHOID ROOFING.

Office of the Insular Purchasing Agent.—January 5th, 1905. Sealed Proposals in triplicate will be received at this office until 11 a. m. January 12th, 1905, subject to the usual conditions at which time and place they will be opened in the presence of the attending bidders, for milling lumber for this Bureau for the period January 15th, 1905, to June 30th, 1905. C. P. 178.

Apply to this office for forms and specifications.

To Contractors.—Office of the Bureau of Architecture and Construction of Public Buildings, 158 Calle Anloague, Manila, P. I., Nov. 30, 1904. Sealed proposals addressed to the undersigned and plainly marked "Proposal for Job No. 547," will be received at this office and at the office of the Provincial Supervisor, Cebu, P. I., until 10:00 A. M., December 20th, 1904, for furnishing all material and doing all labor required to fully complete the erection of a coal shed at Cebu, P. I., in the manner and conditions set forth in the form of proposal and the specifications, copies of which with other information may be obtained upon application to this office. The right is reserved to reject any or all bids and waive any defects. D. E. Graham, Acting Chief of Bureau.

The Government of the Philippine Islands, Executive Bureau.—Manila, January 9, 1905. Executive Order, No. 1.—The action of the Secretary of Finance and Justice in authorizing the Insular Treasurer and all provincial treasurers to continue the redemption after January 1, 1905, of Spanish-Filipino currency, Mexican currency, Chinese subsidiary silver coins and all foreign copper coins now circulating in the Philippine Islands, at the official rate of one peso, Philippine currency, for one peso and fourteen centavos, local currency, fixed by Executive Order No. 50, series of 1904, is hereby ratified and confirmed this having become necessary in view of the large numbers of people in the Islands who had been unable at the close of business on December 31, 1904, to exchange their local currency.

In order to give every opportunity to the people to effect the exchange of the local currency in their possession for Philippine currency it is hereby ordered that the Insular Treasurer and all provincial treasurers in the Philippine Islands shall, on and after this date and until February 1, 1905, purchase Spanish-Filipino currency, Mexican currency, Chinese subsidiary silver coins and all foreign copper coins now circulating in the Philippine Islands, at one peso, Philippine currency, for one peso and twenty centavos, local currency.

LUKE E. WRIGHT,

Civil Governor.

NEW FIBER MACHINE

(Continued from page 27.)

We write to you on this subject, as we believe from the various articles we have read from time to time in your esteemed paper that you are interested in it.

The machine is in our works, and we would be glad to let anybody see it and to give any further particulars asked for.

We do not think that people interested in fibres need now have unsatisfied dreams concerning them and sigh for a successful machine. If there is anything in all the talk there has been for years on this subject, we would be glad to satisfy the desires of the talkers.

BURN & Co.

Howrah, 19th November, 1904.

BOULEVARD, MANILA.—Work of surveying the land for the construction of a 100-foot-wide boulevard from Manila to Fort William McKinley is to be commenced in a few days. Major General Corbin realized the necessity of such a thoroughfare within a few days after his arrival in this city and in conferences held with the civil authorities it has been agreed that the insular government will supply prison labor for the construction with the condition that the prisoners shall be guarded by the military.

The idea is to construct a roadway as straight as the crooked Pasig river will permit, the course of the Pasig having to be followed to a greater degree than is desired. It is calculated that the cost of the boulevard will be but small as compared with the great advantages to be gained in its construction. Engineer officers and all transportation will be supplied by the military authorities.

PILE DRIVER, MANILA.—A large pile-driving machine has arrived for use on the Antipolo branch of the Manila and Dagupan R. R. on the new steel bridge to be built over the San Juan river beyond Santa Mesa.

FAR EASTERN STOCKS AND QUOTATIONS

COURTESY OF BENJAMIN, KELLY & POTTS, SHAREBROKERS, HONGKONG-MANILA, 30th December, 1904.

STOCKS	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation*	CLOSING QUOTATIONS
Banks.												
Hongkong and Shanghai Banking Corporation.....	1865	\$10,000,000	80,000	\$125	\$125	{ g £1,000,000 s \$7,000,000 i \$250,000 }	\$1,492,554	30-6-04	{ £1 10s. @ exchange 1s. 9 15-16 = \$16.41 for first half year 1904 }	22-8-04	5 1/4	{ \$7 10 London £70 1/2 }
National Bank of China, Limited.....	1891	£699,475	99,925	£7	£7	{ c \$175,533 \$191,973 }	\$21,668	31-12-03	\$2 (London 3s. 6) for 1903	1-2-04	5 1/4	\$39
Marine Insurances.												
Canton Insurance Office, Limited.....	1881	\$2,500,000	10,000	\$250	\$50	{ j \$1,400,000 \$81,739 }	\$150,494	31-12-03	\$17 for 1903	22-10-04	6 3/4	\$250 buyers
China Traders' Insurance Co., Ltd.	1865	\$2,000,000	24,000	\$83.33	\$25	{ f \$950,000 \$151,992 j \$362,366 u \$371,445 }	Nil.	30-4-04	\$4 1/2 for year ended 30-4-1904.....	8-12-04	7 1/2	\$58 buyers
North China Insurance Co., Ltd.....	1863	£150,000	10,000	£15	£5	T800,000	T217,119	30-6-04	Final of 10s. making £1 for 1903 ...	26-10-04	8	T96 sellers
Union Insurance Society of Canton, Limited.....	1867	\$2,500,000	10,000	\$250	\$100	{ s \$1,850,000 g £20,000 f \$372,749 j \$893,116 u \$846,773 }	\$2,078,997	30-6-04	\$35 for 1903	21-10-04	5	\$690 buyers
Yangtze Insurance Association, Ltd. ...	1862	\$800,000	8,000	\$100	\$60	{ f \$700,000 \$37,794 }	\$432,475	31-12-03	\$12 for 1902	22-4-04	8	\$150
Fire Insurances.												
China Fire Insurance Co., Ltd.	1870	\$2,000,000	20,000	\$100	\$20	{ \$1,000,000 x \$125,675 }	\$329,047	31-12-03	\$6 dividend and \$1 bonus for 1902...	11-3-04	8	\$90 buyers
Hongkong Fire Insurance Co., Ltd.....	1868	\$2,000,000	8,000	\$250	\$50	{ f \$2,561 \$1,170,288 }	\$371,110	31-12-03	\$22 1/2 for 1902	7-3-04	6 3/4	\$330 buyers
Shipping, Tug and Cargo Boats.												
China and Manila Steamship Co., Ltd. ...	1882	\$750,000	(1) 30,000	\$25	\$25	none	Dr. \$63,123	31-12-03	\$5 for 1900	25-3-01	—	\$23
Douglas Steamship Co., Ltd.	1883	\$1,000,000	20,000	\$25	\$25	{ i \$185,000 \$85,439 }	Nil.	30-6-04	\$2 for year ended 30-6-1904	29-9-04	6	\$33 1/2 buyers
Hongkong, Canton and Macao Steamboat Company, Ltd.....	1865	1,200,000	80,000	\$15	\$15	{ e \$250,000 d \$600,000 f \$157,555 £100,000 }	\$16,362	30-6-04	\$1 1/2 for first half year 1904	17-8-04	10 1/4	\$28 sellers
Indo-China Steam Navigation Company, Ltd.....	1882	£1,200,000	(2) 60,000	£10	£10	{ i £205,000 }	£5,853	31-12-03	10s. @ 1s. 10 5-16 = \$5.37.82 for 1903..	13-7-04	4 1/2	\$128 buyers
Shanghai Tug and Lighter Co., Ltd. ...	1903	T1,500,000	{ 20,000 100,000 }	T50	T50	none	T55,541	31-12-03	Interim of T2 for 1904	13-8-04	{ 9 7 1/4 }	T50 sales T48 sales
Do. do. Preference..	1898	£2,000,000	2,000,000	£1	£1	£400,000	£19,555	31-12-02	Interim of 1s. (Coupon No. 4) for '03	29-1-04	4	25s. 6d buyers
"Shell" Transport & Trading Co., Ltd..	1898	{ \$200,000 10,000 }	{ 10,000 10,000 }	\$10	\$10	{ i \$15,093 \$400,000 \$21,075 \$18,000 \$130,153 }	\$1,287	30-4-04	{ \$1 80, Div. 40 cts. bonus } for year end- { \$0.90, " 20 " " } ing 30-4-04. }	2-6-04	{ 5 1/2 3 1/2 }	\$40 \$30
"Star" Ferry Co., Ltd.....	1900	\$500,000	(3) 5,000	\$100	\$100	{ e \$21,075 r \$18,000 i \$130,153 }	\$33,648	31-12-03	\$5 for 2nd 1/2 year, making \$13 for '03	21-4-04	9	\$145 sellers
Straits Steamship Co., Ltd.	1890	T. T1,500,000	30,000	T. T50	T. T50	{ d T98,000 T201,614 }	T865	31-12-03	Interim of T1 1/2 for 1904	20-7-04	10	T30 sellers
Refineries												
China Sugar Refining Company, Ltd....	1878	\$2,000,000	20,000	\$100	\$100	none	Dr. \$147,717	31-12-03	Interim of \$5 for 1904.....	29-8-04	—	\$227 sellers
Luzon Sugar Refining Company, Ltd....	1882	\$700,000	7,000	\$100	\$100	none	Dr. \$73,905	31-12-03	\$3 for 1897	24-3-98	—	\$16 buyers
Peru Sugar Cultivation Co., Ltd.....	—	T350,000	7,000	T50	T50	T100,000	T1,635	30-9-04	T2 1/2 for year ending 30-9-04	17-12-04	4 1/4	T60 sellers
Mining.												
Chinese Engin'ring and Mining Co., Ltd.	1901	£1,000,000	1,000,000	£1	£1	g £40,000	£7,820	29-2-04	No. 3 of 1s 6d.....	15-9-04	—	T6 3/4 sellers
Oriental Consolidated Mining Co., Ltd.	1901	G.\$5,000,000	z 500,000	G. \$10	G. \$10	none	G. \$672,093	31-12-03	Final of 50 cents making G \$1 for '04	30-12-04	6 1/4	G. \$16 1/2
Raub Australian Gold Mining Co., Ltd..	1892	£200,000	{ 150,000 50,000 }	£1	18/10	{ £4,873 £1 F.307,740 }	Dr. £4,029	31-3-04	No. 12 of 1s.=48 cents.....	28-1-01	—	\$3 1/2
Société Française des Charbonnages du Tonkin.....	1888	F.4,000,000	16,000	F 250	F.250	{ a F.1,529,652 }	F.87,333	31-12-03	Final of F.25, making F. 50 for 1903.	1-9-04	—	\$490

STOCKS	WHEN ESTAB- LISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation*	CLOSING QUOTATIONS
PER CENT												
Docks, Wharves and Godowns.												
Geo. Fenwick and Co., Ltd.	1889	\$150,000	6,000	\$25	\$25	\$70,000	\$10,517	31-12-03	\$3.75 for 1903	11-3-04	8	\$45 sellers
Hongkong and Kowloon Wharf and Godown Co., Ltd.	1886	\$1,500,000	30,000	\$50	\$50	\$50,989 \$250,000	\$28,015	31-12-03	Interim of \$2½ for '04	31-8-04	4½	\$111½ buyers
Hongkong & Whampoa Dock Co., Ltd.	1901	\$2,500,000	50,000	\$50	\$50	\$25,500	\$505,471	30-6-04	\$6 div. & \$2 bonus for 1st ½ year '04	23-8-04	7¼	\$216 buyers
Howarth Erskine, Ltd.	1901	\$1,200,000	12,000	\$100	\$100	\$60,000	—	30-6-04	\$10 div. & \$5 bonus for the year	8-04	7½	\$203 buyers
New Amoy Dock Co., Ltd.	1892	\$40,500	6,000	\$6¾	\$6¾	\$55,500	\$489	31-12-03	\$1¼ for '03	5-5-04	4¼	\$27 sellers
Riley Hargreaves & Co., Ltd.	1899	\$875,000	6,000	\$100	\$100	\$150,000	\$40,936	31-12-03	\$10 div. and \$2½ bonus for '03 \$7 dividend	7-3-04	6½	\$192½
Do. (Preference)			2,750						Final of T7 making T12 for year ending 30-4-04	20-7-04	7	\$111½
S. C. Farnham, Boyd & Co., Ltd.	1901	T5,520,000	55,200	T100	T100	T900,000	T48,153	30-4-04				T170 buyers
Shanghai and Hongkew Wharf Co.	1902	T3,200,000	32,000	T100	T100	T487,210 T50,913	T22,895	31-12-03	Interim of T4 for '04	23-8-04	8¾	T125 buyers
Tanjong Pagar Dock Co., Ltd.	1864	\$3,700,000	37,000	\$100	\$100	\$2,100,000	—	30-6-04	\$6 for first half year '04	9-04	5	\$230 sales
Yangtze Wharf and Godown Co., Ltd.	1902	T250,000	2,500	T100	T100	T6,000	T1,760	31-12-03	T18 for '03	31-3-04	9½	T187½ sales
Lands, Hotels and Buildings.												
Astor House Hotel Co., Ltd. (Shanghai)	1901	\$750,000	(4) 30,000	\$25	\$25	none	\$9,989	30-6-04	\$2½ for year ending 30-6-04	30-8-04	9	\$28 sales
Astor House Hotel, Ltd. (Tientsin)	—	T. T100,000	2,000	T. T50	T. T50	T41,000	T655	29-2-04	Interim of T4	29-10-04	6	T148 sellers
China Land and Finance Co., Ltd.	1903	T300,000	6,000	T50	T50	—	—	First year	Interim of T2	1-10-03	—	T55
Hongkong Hotel Co., Ltd.	1866	\$600,000	12,000	\$50	\$50	\$100,000 \$11,824 \$20,000	\$11,668	30-6-04	\$5 for first half-year for '04	29-8-04	8	\$144
Hongkong Land Investment and Agency Co., Ltd.	1889	\$5,000,000	50,000	\$100	\$100	\$500,000	\$51,966	31-12-03	Interim of \$6 for '04	27-7-04	8	\$147 sellers
Hotel des Colonies Co., Ltd. (Shanghai)	1902	T225,000	9,000	T25	T25	T13,986	T680	31-3-04	To.87½ for the year ending 31-3-04	28-5-04	4½	T19 sales
Humphreys' Estate & Finance Co., Ltd.	1887	\$1,500,000	150,000	\$10	\$10	\$200,607 \$50,000	\$9,177	31-12-03	90 cents for '03	11-2-04	7¼	\$12¾ sellers
Kowloon Land and Building Co., Ltd.	1889	\$300,000	6,000	\$50	\$30	none	\$636	31-12-03	\$2.60 for '03	21-1-04	6½	\$38½
Shanghai Land Investment Co., Ltd.	1901	T2,600,000	52,000	T50	T50	T800,000 T150,800 T17,114	T37,634	31-12-03	Interim of T3 for '04	18-7-04	7	T117 buyers
Tientsin Hotel des Colonies, Ltd.	1903	T70,000	1,400	T50	T50	none	Dr. T2,123	30-4-04	Interim of T3½	23-9-03	—	T44 buyers
Tientsin Land Investment Co., Ltd.	1902	T772,600	7,726	T100	T100	T54,626	T325	31-12-03	Interim of T3 for 1904	25-7-04	7	T125 sellers
Wei-hai-wei Land and Building Co., Ltd.	1899	T91,850	3,764	T25	T25	none	Dr. T5,150	31-12-03	None	—	—	T12 buyers
West Point Building Co., Ltd.	1889	\$625,000	12,500	\$50	\$50	none	\$1,362	31-12-03	Interim of \$1½ for '04	27-7-04	5	\$59 sellers
Cotton Mills.												
Ewo Cotton Spinning and Weaving Co., Ltd.	1895	T750,000	15,000	T50	T50	none	T11,655	31-10-03	T4 for year ended 31-10-03	22-12-03	16	T25 sales
Hongkong Cotton Spinning, Weaving and Dyeing Co., Ltd.	1901	\$1,250,000	125,000	\$10	\$10	none	\$22,862	31-7-04	50 cents for year ended 31-7-04	12-9-04	3¾	\$13¾
International Cotton Manufacturing Co., Ltd.	1895	T750,000	(5) 10,000	T75	T75	T50,000 T35,227	T13,629	30-9-04	Interim of 3 per cent account 1898	30-4-98	—	T25 buyers
Laou-kung-mow Cotton Spinning & Weaving Co., Ltd.	1895	T800,000	(6) 8,000	T100	T100	none	T15,500	31-12-03	Interim of 4% a/c 1898 on 6,000 shares	1-8-98	—	T25 sales
Soy Chee Cotton Spinning Co., Ltd.	1895	T1,000,000	2,000	T500	T500	T5,658	T26,389	31-12-03	4% for 1897	2-2-98	—	T150
Cigar and Tobacco Cos.												
Alhambra, Limited	1898	\$60,000	300	\$200	\$200	none	\$799	30-6-04	\$125 for year ending 30-6-1900	15-8-01	—	\$100 buyers
Philippine Company, Limited	1904	\$675,000	67,500	\$10	\$10	—	—	—	First year	—	—	\$9½
Shanghai-Sumatra Tobacco Co., Ltd.	1902	T600,000	(7) 30,000	T20	T20	T24,820 T25,000	T1,091	31-10-03	Interim of T3 per share	31-8-04	9¼	T65 sales
Miscellaneous.												
A. S. Watson & Co., Ltd.	1886	\$900,000	90,000	\$10	\$10	\$250,000 \$25,000	\$2,883	31-12-03	Interim of 50 cents for '04	25-11-04	8	\$12½ buyers
Bell's Asbestos Eastern Agency, Ltd.	1895	£5,377 10s	8,604	12s. 6	12s. 6	none	£161	31-12-03	6d. per share for '03	21-7-04	5¾	\$5
Campbell, Moore & Co., Ltd.	1886	\$12,000	1,200	\$10	\$10	\$3,500	\$596	31-12-03	\$3 for 1903	2-4-04	7½	\$40 buyers
Central Stores, Ltd.	—	\$91,845	6,000	\$15	\$12	\$20,000	\$1,253	31-12-03	Interim of \$1.20 for '04	20-7-04	11¾	\$22 sellers
Do. (Founders')	—		123						None	—	—	\$100
Do. (New Issue)	1904	\$360,000	24,000	\$15	\$7½	—	First	year	Preferential of 7% for '04	20-7-04	6½	\$8 sellers
China-Borneo Co., Ltd.	1903	\$20,000	(8) 60,000	\$12	\$12	none	Nil.	31-12-03	60 cents for 1903	21-3-04	4¾	\$13½ buyers
China Flour Mill Co., Ltd.	—	T200,000	4,000	T50	T50	T25,000	T1,942	31-12-03	T6 for 1903	23-3-04	8	T75 sales
China Light and Power Co., Ltd.	1901	\$300,000	30,000	\$10	\$10	none	\$3,739	29-2-04	None	—	—	\$10 sales
China Provident Loan and Mortgage Co., Ltd.	1898	\$1,000,000	100,000	\$10	\$10	\$55,000	\$1,171	31-12-03	80 cents for 1903	18-1-04	8½	\$9¾
Dairy Farm Company, Ltd.	1896	\$187,500	25,000	\$7½	\$6	—	—	31-7-04	\$1¼ for year ending 31-7-03	20-11-03	—	\$12 sales

STOCKS	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation*	CLOSING QUOTATIONS
Miscellaneous.—Continued												
E. L. Mondon, Ltd.	1902	T350,000	7,000	T50	T50	none	Dr. T152,318	31-12-03	T5 for 1902	2-5-03	—	T10 sales
Fraser & Neave, Ltd.	1898	\$225,000	4,500	\$50	\$50	\$169,116	\$2,706	31-12-03	\$5 dividend and \$2½ bonus for '03..	26-3-04	7½	\$100 sal
Green Island Cement Co., Ltd.	1889	\$1,000,000	100,000	\$10	\$10	\$350,000	\$32,115	31-12-03	\$1½ for 1903	7-4-04	5	\$29 buyers
Hall & Holtz, Ltd.	—	\$420,000	(9) 21,000	\$20	\$20	\$186,000	\$13,104	29-2-04	Interim of \$1	28-11-04	14	\$25 sales
Hongkong and China Gas Co., Ltd.	1864	£70,000	7,000	£10	£10	£23,109	£7,625	31-12-03	Final of 6 per cent and bonus of 1 per cent making 22s. for '03..	25-5-04	7½	\$160 buyers
Hongkong Electric Co., Ltd.	1889	\$600,000	30,000	\$10	\$10	none	\$1,747	30-4-04	\$1 50 cents for year ending 30-4-04	18-7-04	6¾	\$15 buyers
Hongkong High-Level Tramways Co., Ltd.	1887	\$125,000	1,250	\$100	\$100	\$50,000	\$2,796	30-11-04	\$15 for year ending 30-11-04	24-12-04	5¾	\$265 sellers
Hongkong Ice Company, Ltd.	1881	\$125,000	5,000	\$25	\$25	\$35,000	\$5,844	31-12-03	Interim of \$4 for 1904	2-8-04	6	\$255
H'kong Rope Manufacturing Co., Ltd.	1883	\$500,000	10,000	\$50	\$50	\$50,000	\$8,395	31-12-03	\$10 for 1903	8-2-04	6½	\$155
Hongkong Steam Waterboat Co., Ltd.	1900	\$150,000	15,000	\$10	\$10	\$2,500	\$299	30-9-04	Final of 70 cents and 50 cents bonus, making \$1.90 for the year	26-11-04	9½	\$20
Katz Brothers, Ltd.	1896	\$1,000,000	10,000	\$100	\$100	\$375,000	—	31-12-03	\$13 for 1903	—3-04	9¾	\$135 buyers
Lane, Crawford & Co., Ltd. (Shanghai).	1903	\$250,000	2,500	\$100	\$100	none	\$21,582	29-2-04	Interim of \$5	19-11-04	8½	\$140 buyers
Maatschappij tot Mijn-, Bosch- en Landbouweexploitatie in Langkat	1902	G.2,500,000	25,000	G.100	G.100	T334,669	T27,187	31-10-03	Fourth quarterly dividend of T5 making in all T35 for 04	15-12-04	13	T272½ sales
Maynard & Co., Ltd.	1901	\$34,000	3,400	\$10	\$10	none	\$803	31-12-03	\$2 for year ended 31-10-03	—1-04	7¼	\$27 buyers
S. Moutrie & Company, Limited	1899	\$200,000	4,000	\$50	\$50	\$5,000	\$832	30-6-04	Final of \$3 making \$5 for year end. 30 6-04	28-12-04	9	\$55 sales
Shanghai and Hongkong Dyeing and Cleaning Co., Ltd.	1903	\$60,000	1,200	\$50	\$50	none	Dr. \$5,537	31-8-04	None	—	—	\$50
Shanghai Gas Co., Ltd.	1903	T800,000	16,000	T50	T50	T125,000	T7,548	31-12-03	Interim of T3½ for '04	29-7-04	8	T105 buyers
Shanghai Horse Bazaar Co., Ltd.	1904	T270,000	5,400	T50	T50	T45,000	T10,247	31-12-03	T5 for 1903	8-4-04	5½	T90 sellers
Shanghai Pulp and Paper Co., Ltd.	—	T450,000	4,500	T100	T100	T10,000	T3,288	31-12-03	Interim of T6 for '04	20-7-04	7½	T165
Shanghai Waterworks Co., Ltd.	1881	£144,000	7,200	£20	£20	T140,000	T7,369	31-12-03	Interim of 15s. for '04	25-7-04	6	T400 buyers
Singapore Dispensary, Ltd.	1891	\$30,000	600	\$50	\$50	\$19,000	\$800	31-7-03	\$5 for year ended 31-7-03	11-11-03	6	\$80
South China Morning Post, Ltd.	1903	\$150,000	6,000	\$25	\$25	none	Dr. \$39,020	29-2-04	None	—	—	\$25 nominal
Steam Laundry Co., Ltd.	1902	\$75,000	5,000	\$5	\$5	none	\$3,644	31-5-04	60 cents for year ended 31-5-04	2-8-04	8½	\$7
Straits Ice Company, Ltd.	1884	\$200,000	2,000	\$100	\$100	\$45,000	—	—	First year	—	—	\$4 sales
Straits Trading Co., Ltd.	1887	\$2,500,000	250,000	\$10	\$10	\$650,000	\$83,405	30-9-03	\$7½ for second half year '03..	—2-04	9¼	\$160 sales
Tientsin Native City Waterworks Co., Ltd.	1902	T294,100	2,941	T100	T100	none	T413	31-12-03	\$1 dividend and 25 cents bonus for half year ended 31-3-04.	—6-04	7	\$38¾ buye
Tientsin Waterworks Co., Ltd.	1901	T. T200,000	2,000	T. T100	T. T100	T15,259	T2,211	30-4-04	T2 for half year	9-3-04	—	T. T110
United Asbestos Oriental Agency, Ltd.	1896	\$100,000	9,900	\$10	\$4	\$20,000	\$480	31-5-04	Final of T4 making T8 for '03/4	20-6-04	6¼	T. T130
Do. do. (Founders')	1896	100	100	\$10	\$10	—	—	—	90 cents for year ended 31-5-04	6-8-04	9¼	\$9½ buyers
Watkins, Limited	1899	\$100,000	10,000	\$10	\$10	\$4,802	\$1,042	31-12-03	\$29.70	—	16¾	\$180 buyers
William Powell, Ltd.	1901	\$120,000	12,000	\$10	\$10	\$3,000	\$588	30-6-04	\$1 for 1903	28-3-04	10¼	\$9½ sellers
									Final of 70 cts. making \$1.20 for 03/4	28-9-04	9½	\$12½ buyers

LOANS AND DEBENTURES	AGENTS FOR THE LOAN	AMOUNT OF LOAN	PAR VALUE	OUT-STAND'G BONDS	WHEN PAYABLE.	CLOSING QUOTATIONS
Chinese Government, 7 per cent. Silver Loan 1886 E.	H. & S. Bk. Cor.	T767,200	T250	2022	Mar. 31st & Sept. 30th each year until Mar. 31st, 1917.	par. } Plus accrued
Hongkong Hotel Co., Ltd., 6% Mortgage Debentures of 1899†	H. & S. Bk. Cor.	\$500,000	\$500	all	Half yearly, June 30th and December 31st	par. } interest
Chinese Engineering & Mining Co., Ltd., 6 per cent Debentures of 1902†	The Company..	£500,000	£	£490,000	Half yearly, January 1st and July 1st.	par. }

a Amortisation Fund.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation and Insurance Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund.
h Exchange Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account

l Legal Reserve Fund.
m Electric Light Installation Fund.
n Sinking Fund.
o
p Authorized capital \$2,000,000.
q Depreciation and Repair Fund.
r Repairs and Renewals Account.
s Silver Reserve Fund.
t
u Underwriting Suspense Account.
v Special Works Fund.

w
x Extra Reserve Fund.
y
z 75,000 owned by the Company.
1 5,725 shares unissued.
2 First issue of 60,000 of which 10,111 unallotted.
3 785 shares unissued.
4 7,600 shares unissued.
5 1,616 shares unallotted.
6 842 shares unallotted.
7 Only 13,000 shares issued.

8 14,000 shares unissued.
9 1,166 shares unissued.
*** Based on last year's dividend.
† 373 held by the Company.
‡ In certificates of £20 and £100
§ Redeemable in 10 years, or at option of Company the Company giving 6 months' notice.
† Redeemable at par at rate of £10,000 per annum from 31st December, 1903, to December, 1952.
Dr. Deficit.

SINGAPORE SHARE QUOTATIONS.

NAME	DATE OF FOR- MATION	CAPITAL	CAPITAL PAID UP	NO. OF SHARES	ISSUE VALUE	PAID UP	RESERVE	LAST DIVIDEND	SINCE LAST MAIL		CLOSING QUOTATIONS
									HIGHEST	LOWEST	
Mining.											
Bersawah Gold Mining Co., Ltd.	1900	\$175,000	115,000	13,500	10	7.50			\$	\$	13 sales
" " " " <i>Deferred.</i>				4,000	10	10			8 buyers		
Bruseh Hydraulic Tin Mining Co., Ltd.	1901	600,000	600,000	60,000	10	10					3.50 sellers
Kadana Gold Mining Co., Ltd.	1901	300,000	220,000	20,000	10	10					10 nominal
" " " " <i>Pref.</i>				10,000	10	6			8 "		
Kechau Goldfields, Ltd. <i>Fully paid.</i>	1902	£30,000	£16,175	6,207	1	1					8.00 sellers
" " " " <i>Contrib.</i>				10,493	1	19/-			8.50 sellers		
Pahang Corporation Ltd.	1889	£250,000	244,306	244,306	1	1	20,000	3 per cent for year ending 30-6-02			3.75 sellers
Pahang Kabang Ltd.	1890	375,000	366,000	360,000	1	19/6			1.0	1.10	1.00 buyers
" " " " <i>Pref.</i>				15,000	1	1			nom.		
Queensland Raub G. M. Co., Ltd. <i>Fully paid</i>	1901	£146,700	100,866	36,700	1	1					nom.
" " " " <i>Contrib.</i>				110,000	1	11/8			0.30 sellers		
Raub Aust. Gold Ming. Co., Ltd. <i>Fully paid</i>	1892	200,000	191,250	50,000	1	1	4,873	1s. paid January, '01			4.00 nom.
" " " " <i>Contrib.</i>				150,000	1	18/10			3.75 sales		
Redjang Lebong Mining Co.	1898	f.2,000,000	1,800,000	20,000	100	100		20 per cent for year ending 31-12-03			240 buyers
Royal Johore Tin Mining Co., Ltd.	1900	\$220,000	220,000	22,000	10	10		5 " for year ending 15-2-04			3.25 sellers
Sipiau Tin Co., Ltd.	1899	230,000	230,000	23,000	10	10	8,000	5 " for 1/2 year ending 30-6-03			3.75 sellers
South Raub Gold Ming. Synd. Ltd.	1898	100,000	100,000	1,000	100	100					10 nom.
The Belat Tin Mining Co., Ltd.	1903	300,000	300,000	30,000	10	10					7.75 sellers
Tronoh Mines, Ltd.	1902	£160,000	149,185	160,000	1	1		2s. paid Oct, '04			21.00 buyers
Duff Development Co., Ltd.	1903	£400,000	£350,000	400,000	1	1					12 nom.
General.											
Fraser & Neave, Ltd.	1898	225,000	225,000	4,500	50	50	112,500	10 per cent and 5 per cent bonus for '03	102.00	101.00	101 sellers
H'kong and Shanghai Banking Corporation	1865	10,000,000	10,000,000	80,000	125	125	10,000,000	30s. div. and 10s. bonus at 1s. 8 7/8 =			695 ..
Howarth Erskine, Ltd.	1901	1,200,000	1,200,000	12,000	100	100	6,500,000	\$22.99.4 per share for 1/2 year end-			
Maynard & Co., Ltd.	1901	34,000	34,000	3,400	10	10	250,000	ing 31-12-03			205 sales
Riley, Hargreaves & Co., Ltd.	1899	875,000	875,000	6,000	100	100	140,000	10 & 5 p. ct. bon. for yr. end 30-6-40			25 sellers
" " " " 7 1/2% <i>Pref.</i>				2,750	100	100	150,000	10 p. ct. and 2 1/2 p. ct. bon. for year '03			190 sales
Singapore Cold Storage Co., Ltd. <i>Fully paid.</i>	1903	600,000	240,000	25,000	10	10		7 p. ct. for year 1903			112 buyers
Singapore Dispensary Ltd.	1891	30,000	30,000	600	50	50	19,000	12 1/2 per cent for year ending 31-7-04			9.50 sellers
Straits Ice Co., Ltd.	1884	200,000	200,000	2,000	100	100	45,000	7 1/2 " for 1/2 year ending 31-12-03			75 sellers
Straits Steam Ship Co., Ltd.	1890	500,000	421,500	5,000	100	100	400,000	5 per cent for 1/2 year ending 31-12-03			145 sellers
Straits Trading Co., Ltd.	1887	3,000,000	2,500,000	300,000	10	10	169,228	10 p. ct. & 35 cts. bon. 1/2 yr. end 31-9-04	39.25	38.75	140 sellers
Tanjong Pagar Dock Co., Ltd.	1864	3,700,000	3,700,000	37,000	100	100	700,000	10 p. ct. & 35 cts. bon. 1/2 yr. end 31-9-04			39.25 sales
							1,021,395	\$6 for half year ending 30-6-04			350 sales
							1,950,000				
Debentures.											
Howarth Erskine Ltd. 7 per cent	250,000										3 per cent prem.
Singapore Municipal 6 "	400,000										nominal
" " 5 "	1,878,000										1 " prem. buyers
" " 4 "	655,500										2 " dis. nominal
Riley Hargreaves & Co., Ltd. 6 p. cent	225,000										2 " prem. buyers
Tanjong Pagar Dock Co., Ltd. 6 "	250,000										2 " prem. buyers
" " " " 5 "	1,365,500										1 " prem. buyers

1 3,500 unissued.
2 13,300 "
3 2,000 "

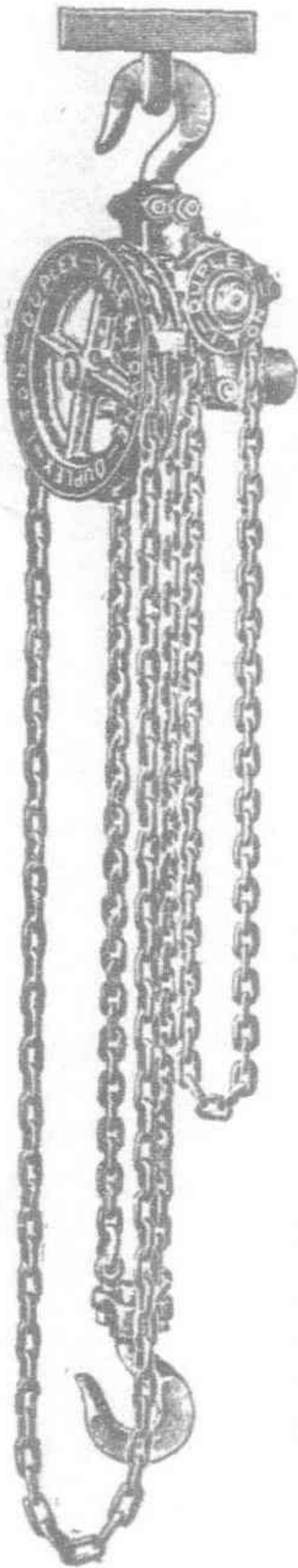
4 35,000 unissued.
5 10,815 "
6 50,000 "

7 785 unissued.
8 50,000 "
9 Special Gold Reserve Fund.

10 Insurance Fund.
11 Sundry Reserves.
12 Sundry Reserves.

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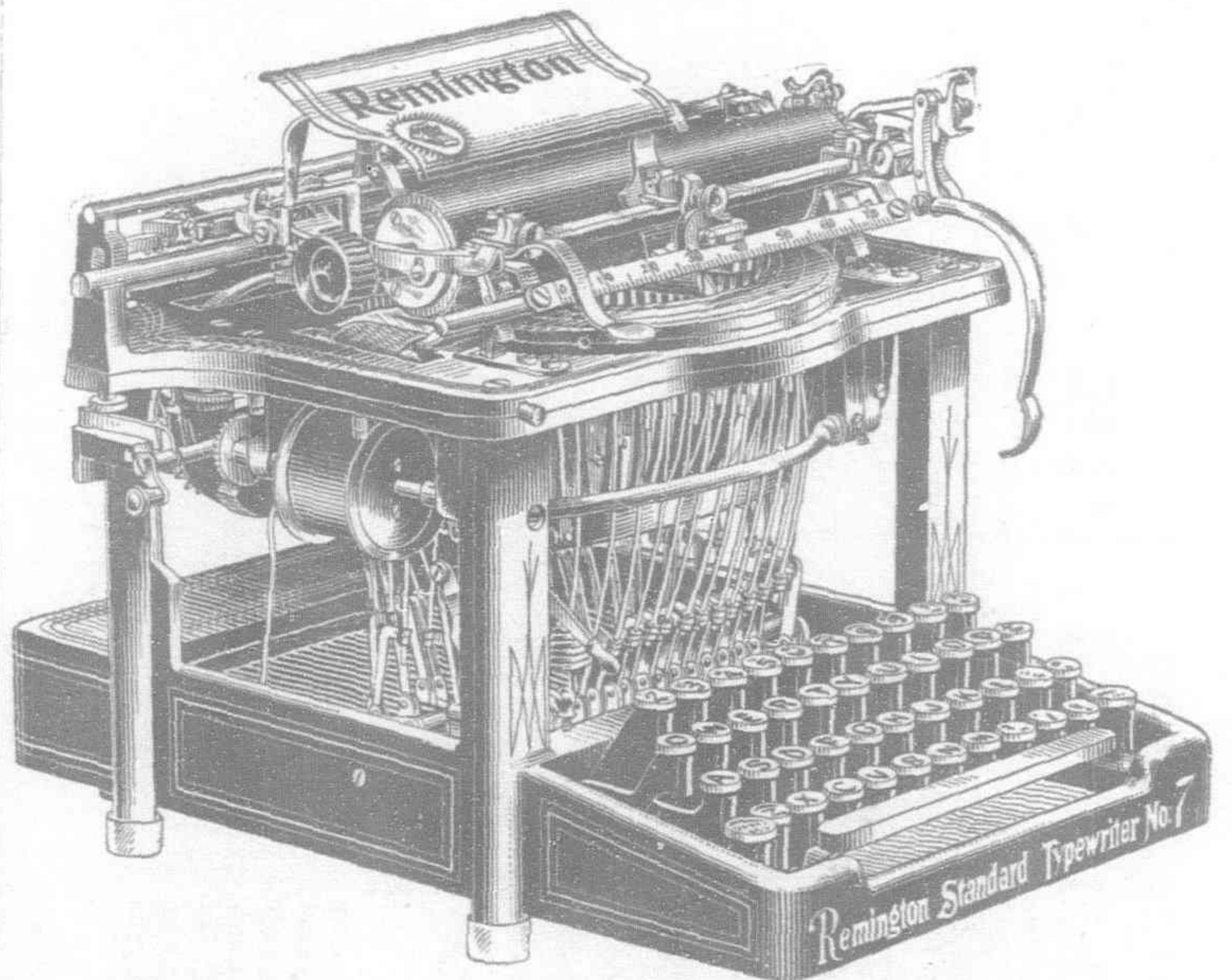
- 1.—The loan will bear interest at the rate of six per centum per annum, payable on the 31st of December and the 30th of June in each year.
- 2.—Debentures will be redeemable in not less than five years and not more than twenty years from the 30th of June, 1904, in such amounts, and in such manner, as the Council may from time to time determine.
- 3.—Applications for the whole of the debentures or for any number thereof will be received by the undersigned from this date.
- 4.—The scrip will be issued in amounts of Tls. 100, Tls. 500, and Tls. 1,000 each. Applicants will please state the amounts in which the debentures they apply for are to be issued.
- 5.—The rate of issue is fixed at par until further notice, and no application below this rate will be entertained.

By Order,

J. O. P. BLAND,
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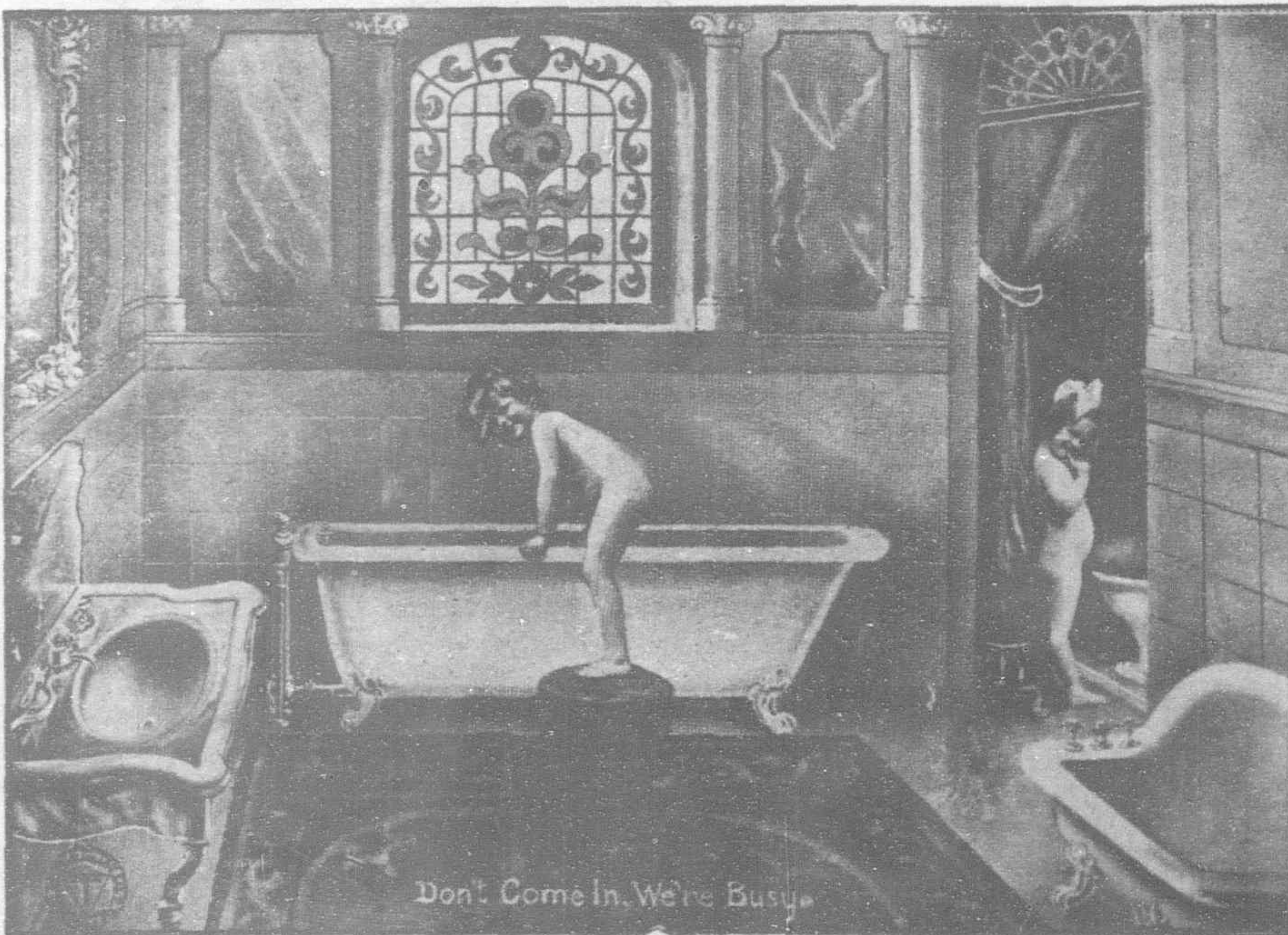
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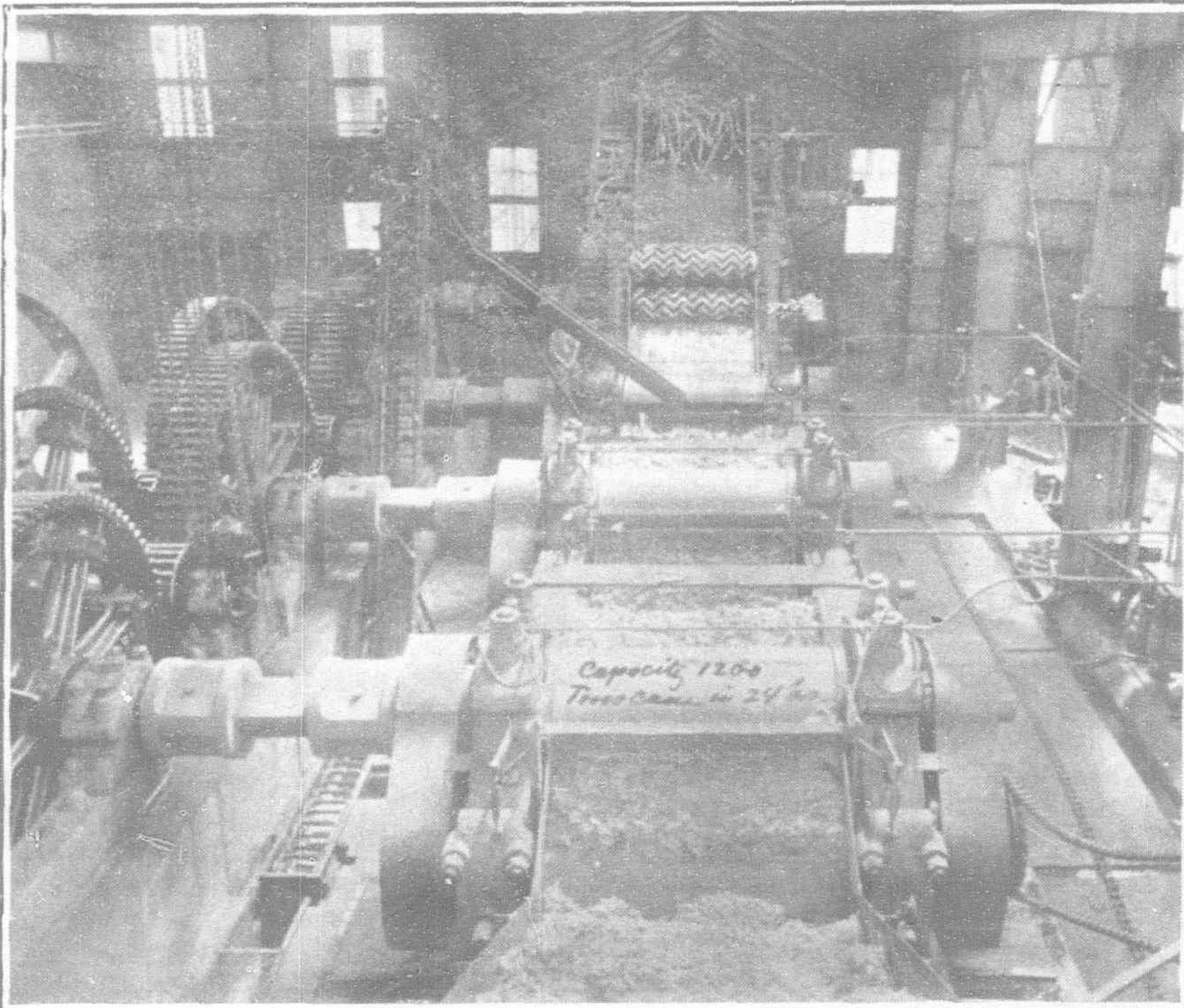
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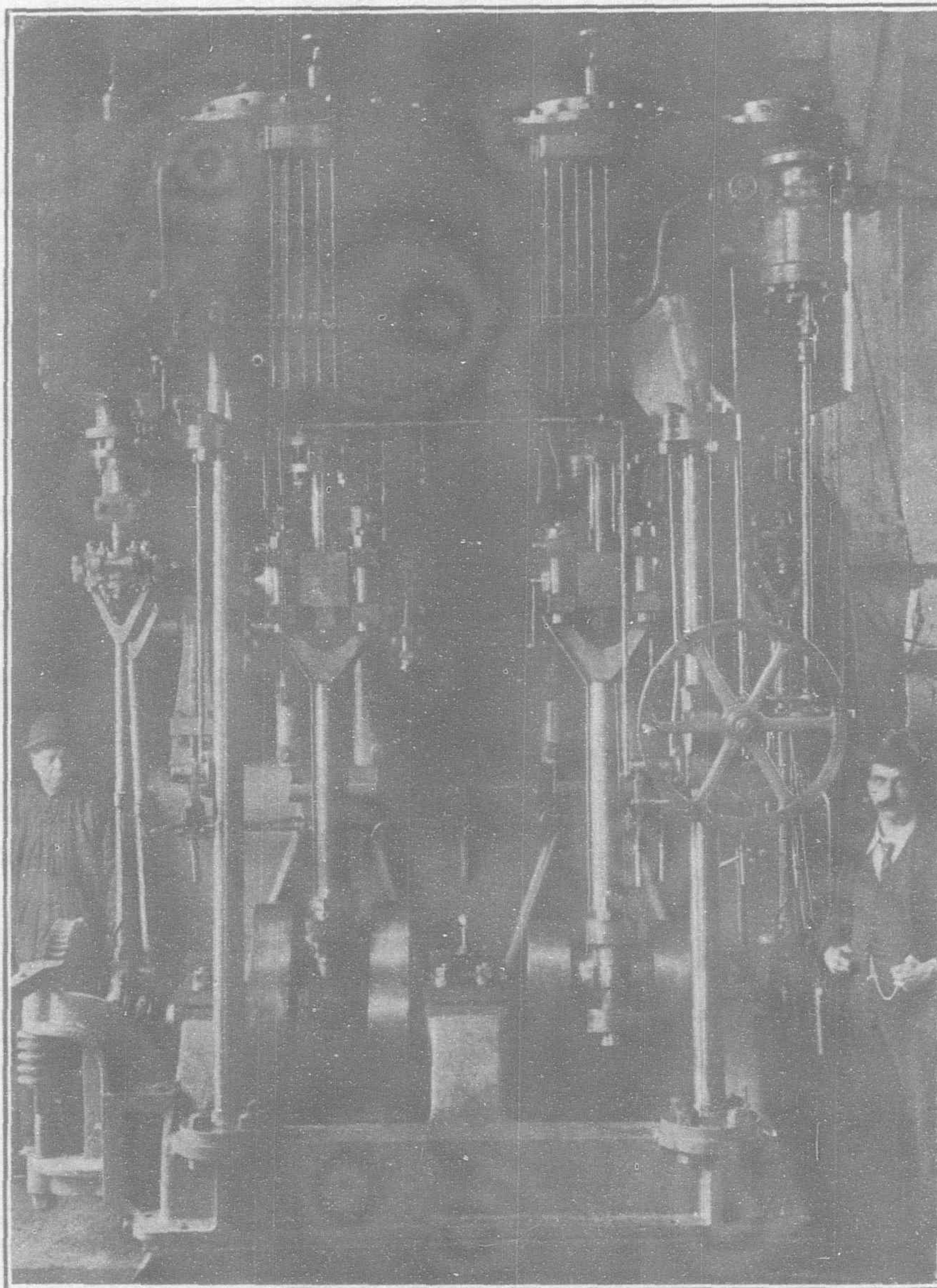
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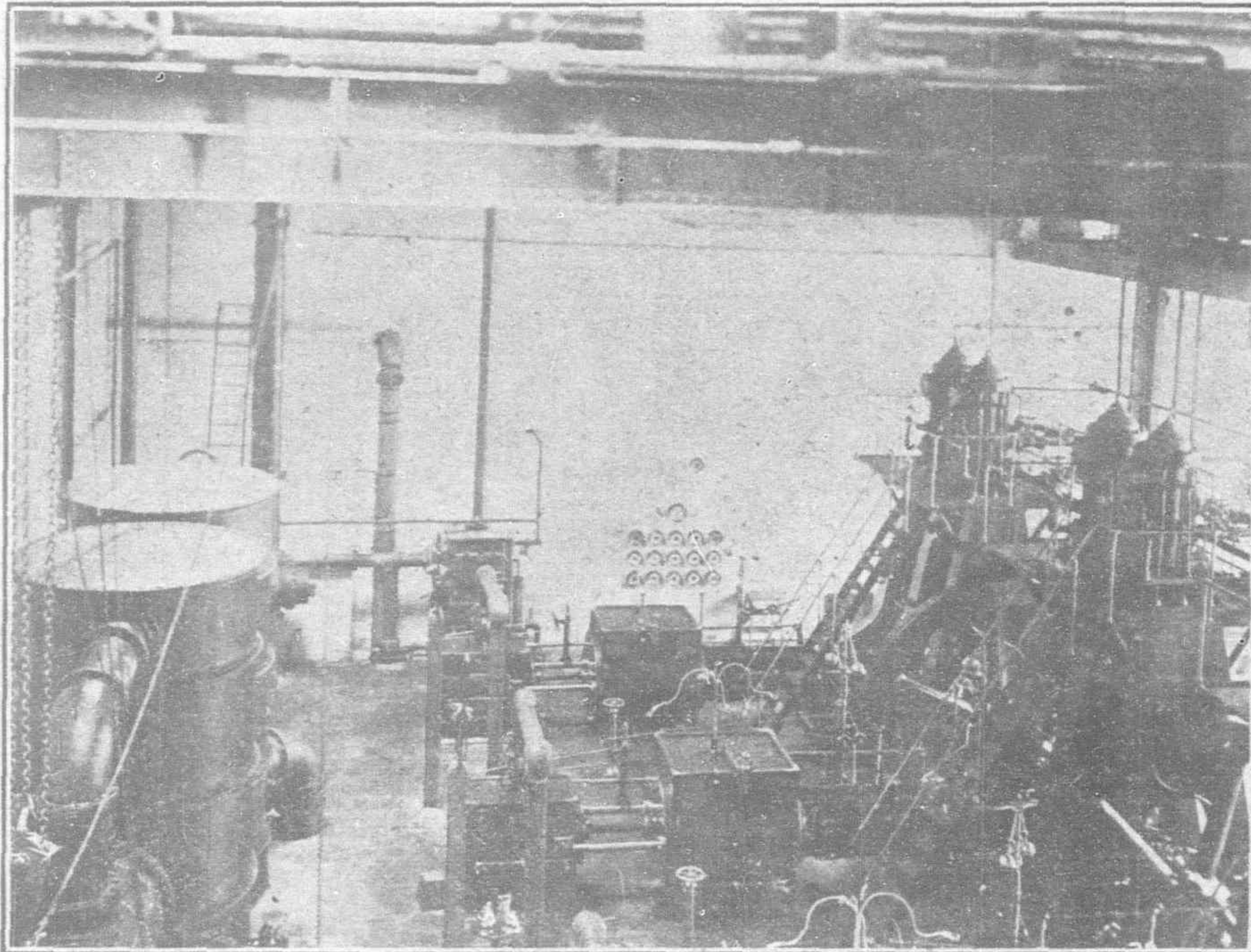
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